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AUTHOR Mainzer, Richard W.; And Others
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ABSTRACT

The manual describes Maryland's programs and processes for serving learning disabled students. Teacher Assistance Teams, a support service for classroom teachers, is the focus of Chapter 1, which examines the team's composition, function, and responsibilities. Chapter 2 presents the state's admission, review, and dismissal process for special education students. Screening procedures are examined in the third chapter while the fourth explores educational assessment. Considerations in cognitive assessment are reviewed in Chapter 5, which discusses selction and interpretation of intelligence tests. Evaluation of the assessment data, including diagnosis of learning disabilities according to federal criteria, is the topic of Chapter 6. Factors that may hinder the diagnostic process are addressed in Chapter 7, including factors related to the students, parents, group process, and individual personnel. A final chapter provides guidelines on designing instruction for learning disabled students. Appended material, which make up nearly half the document, includes summaries of achievement tests and samples of education assessment report formats. (CL)

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LEARNING DISABILITIES:

A DIAGNOSTIC HANDBOOK

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LEARNING DISABILITIES:

A DIAGNOSTIC HANDBOOK

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MARYLAND LEARNING DISABILITIES PROJECT PERSONNEL

Assistant State Superintendent

Mrs. Martha J. Irvin
Division of Special Education
Maryland State Department of Education

Project Director

Dr. Richard W. Mainzer
Maryland State Department of Education

Project Coordinator

Dr. Gilbert Schiffman
Johns Hopkins University

Project Assistant

Dr. Linda Schuerholz
Johns Hopkins University

Project Facilitators

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University of Arizona

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Project Advisory Committee (cont.)

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Mrs. Anne Vinup
Metropolitan Baltimore
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Project Consultants

Dr. Regina Cicci
Hearing and Speech Clinic
University of Maryland Hospital

Dr. Drake Daune
Neurologist
Mayo Clinic

Dr. Brian Enright
Assistant Professor
Exceptional Childhood Education
Western Kentucky University

Dr. Jean McCarthy
Director, Leadership Training
Institute in Learning Disabled
University of Arizona

Dr. Ester Minskoff
Department of Special Education
James Madison University
of Virginia

Dr. Mario Pascale
Frostig Center of Education
Therapy
California

Project Consultants (cont'd)

Dr. Jules Abrams
Psychologist
Hahneman Medical College

Dr. Sylvia Richardson
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Chapter I

TEACHER ASSISTANCE TEAMS

CHAPTER I

Teacher Assistance Teams

As students progress through their school years, it is not uncommon for them to have problems and/or difficulties in learning. Most often teachers respond to transient educational problems as a part of the regular routine. At other times educational difficulties are resistant to change or beyond the resources of the classroom teacher.

Frequently when a student presents a particularly unique problem, the classroom teacher has no place to turn for assistance other than referring the student to the school Admission, Review and Dismissal (ARD) committee. However, this approach does not usually offer immediate support. The process of determining whether a student is handicapped and in need of special education is often a time consuming and expensive process. In some cases it may be that the student is not handicapped and not in need of special education services. In these cases, the delay in providing assistance to the teacher and student may have been unnecessary.

One alternative to providing assistance to the teacher and student is the development of a support system for classroom teachers. This support system can assist in clarifying the nature of an individual student's learning and/or behavior problem and in providing immediate and relevant support to the teacher in dealing with the problem. One such support system is a building level teacher assistance team. Any teacher, or parent, who becomes aware of a problem of a student can request the team's assistance. The team meets to clarify the problem, generate possible actions, and recommend a specific intervention. Many local education agencies (LEAs) have established school-based teams to assist teachers with educational problems. These groups are designated by many different names,

including educational management teams (EMTs), screening committees, and school instructional teams (SITs). They all share the common aims of:

- Assisting teachers in identifying and establishing interventions for students having educational difficulties;
- Providing an efficient, flexible, and cost effective problem solving alternative prior to an ARD referral; and
- Providing support to teachers in mainstreaming handicapped students.

The models are based upon the following assumptions:

- Regular classroom teachers have valuable skills and knowledge to assist students experiencing educational difficulties;
- Teachers can resolve more problems working together than alone;
- A large number of students at one time or another experience educational problems which can be and should be resolved without a special education ARD referral; and
- When teachers are provided with an alternative to special education ARD referral, the ARD committee functions more effectively and efficiently.

Who are the members of the assistance team?

The answer to this question should be dependent on the staffing pattern of the building and the nature of the presenting problem. For example, at the elementary level it may be appropriate for other teachers of the same grade level to be members of the team. That is, if the student in question is a second grader, then the other second grade teacher(s) would be on the team. If, however, the student is a sixth grader, and the sixth and seventh grade teachers are departmentalized and function as a team, then the teachers of the team or department should be considered as members of the building assistance team.

At the secondary level, the considerations for team members would be similar. If the presenting problem is in mathematics, then members of the mathematics department should be members of the team. If, however, the problem appears to be more generic, affecting more than one class or academic area, then it would be more appropriate to have the teachers of the student's current classes as team members.

In addition to the instructional staff as members of the team, the following personnel should also be considered for membership on the team either on a regular basis or as appropriate:

(1) Title I teacher or other remedial program teacher,

(2) District curriculum resource/consultant personnel,

(3) Counselor,

(4) Special educators,

(5) School psychologist,

(6) Pupil personnel worker,

(7) School administrator.

A note of caution: The building level assistance team should be viewed as a mechanism for problem solving. For this reason, the number of members should be kept to a minimum with probably no more than five members.

When does the team meet?

It is advisable that the schedule for the team meetings be relatively constant. At the elementary level the team might meet every Tuesday after school dismissal. The schedule of meetings could further be defined by stating that the primary grades and intermediate grades would be considered on alternate Tuesdays; that is, the first Tuesday team meeting will be considered for students from grades K-3, the next Tuesday for

students in grades 4-6. For elementary buildings with large enrollment, it may be necessary to designate two days per week for team meetings: for example, Tuesday for grades kindergarten through three and Thursday for grades four through six.

Regardless of the schedule for team meetings, the team discusses only those students a teacher or teachers have decided ahead of time to discuss. The team meets only if there are students to discuss either as initial referrals or for follow-up.

What are the responsibilities of the team?

The responsibilities of the building level assistance team are dependent on the needs and desires of the staff, but the responsibilities should be explicitly stated and understood before initiating the concept of the building level assistance team. Following are some ideas relative to the teams' responsibilities:

(1) Delineate and clarify problems.

The team would assist the teacher in clearly stating the problem. This may require the team to review existing information about the student, such as group achievement test results, previous classroom performance, previously attempted interventions, and any previous evaluations.

(2) Recommend that assessment data be gathered before any further efforts are taken to define the problem or to develop a plan of action.

In some circumstances, the team may find it necessary to have additional information collected before making any recommendations.

(3) Develop a plan of intervention.

The team assists in developing an intervention plan. The plan could include the use of an aide, volunteer, or a peer tutor; the use of different instructional materials; preferential seating; modification of classroom materials or selection of alternative materials; assignment to a different instructional group; a behavior modification program; the use of a specific remedial program; or some other appropriate action.

(4) Assist the teacher in monitoring the effectiveness of the intervention.

The team would periodically meet after the plan was implemented to discuss the student's progress and possible adjustments to the plan.

(5) Recommend the student for participation in a remedial program provided by the district, such as a Title I program or a special reading program.

The team would function as a screening team for any non-special education, remedial, or compensatory programs.

(6) Refer the student to the school ARD committee.

In some cases, the team may suspect that the difficulties experienced by the student may be caused by a handicapping condition, in which case the team would make a referral to the school ARD committee.

Who should coordinate the Team's activities?

One individual must assume the responsibility for coordinating the activities of the team. Ideally, the coordinator could be any member

of the building's professional staff, such as a counselor or teacher. Regardless of who functions as coordinator, the individual should have authority to act on behalf of the principal.

The responsibilities of the coordinator will likely include:

(1) Scheduling students referred by teachers for team meetings,

(2) Contacting team members about scheduled meetings,

(3) Contacting or seeing that the student's parents are contacted concerning the difficulty and the referral to the teacher assistance team,

(4) Requesting attendance of any specialist that may be particularly helpful in dealing with a referral to the team,

(5) Insuring that all information about a referred student is organized and available for the team meeting,

(6) Facilitating the discussion and problem-solving activities of the team,

(7) Insuring that the team's recommended intervention plan is implemented,

(8) Insuring that appropriate follow up occurs.

Conclusion

The goal of the building level assistance team is to provide an efficient, flexible, and effective means of assisting classroom teachers and students. To do this, the building staff, including the building administrators, must be committed to cooperative problem solving. Without such a commitment, the concept of a building level support system will not be effective.

However, if the staff makes a commitment to a within-building support system, several benefits can be realized beyond the efficient, flexible,

and effective delivery of support to teachers and students. The cooperative problem-solving efforts inherent in such a support system can utilize the often underused talents of teachers in an atmosphere of collegial support.

A building level support team can create a more positive attitude among the building staff with respect to working with students who are experiencing learning and behavior problems. The assistance team is also a vehicle for the building staff to share knowledge, skills, and ideas in educating students with a variety of learning and behavior problems. As this occurs, individual teachers are able to address themselves more effectively to the problems that the students in their classroom are experiencing.

Finally, the teacher assistance team can result in the more effective use of special education personnel. The within-building support system can increase the staff's understanding of the ARD and the appropriateness of ARD referrals. An additional benefit is the information that the teacher assistance team generates on a student prior to referral to the school ARD. This information may provide the ARD with a broader understanding of the student's strengths and weaknesses which in turn assists in determining the unique educational needs of the student.

A note of caution: The teacher assistance team should not be used as a means of delaying the identification of handicapped students or in denying handicapped students special education services. As soon as the team has information which leads them to suspect a student might be handicapped and in need of special education, a referral to the school ARD should be initiated.

Chapter II

THE SPECIAL EDUCATION ADMISSION, REVIEW, AND DISMISSAL PROCESS

CHAPTER II

The Special Education Admission, Review, and Dismissal Process

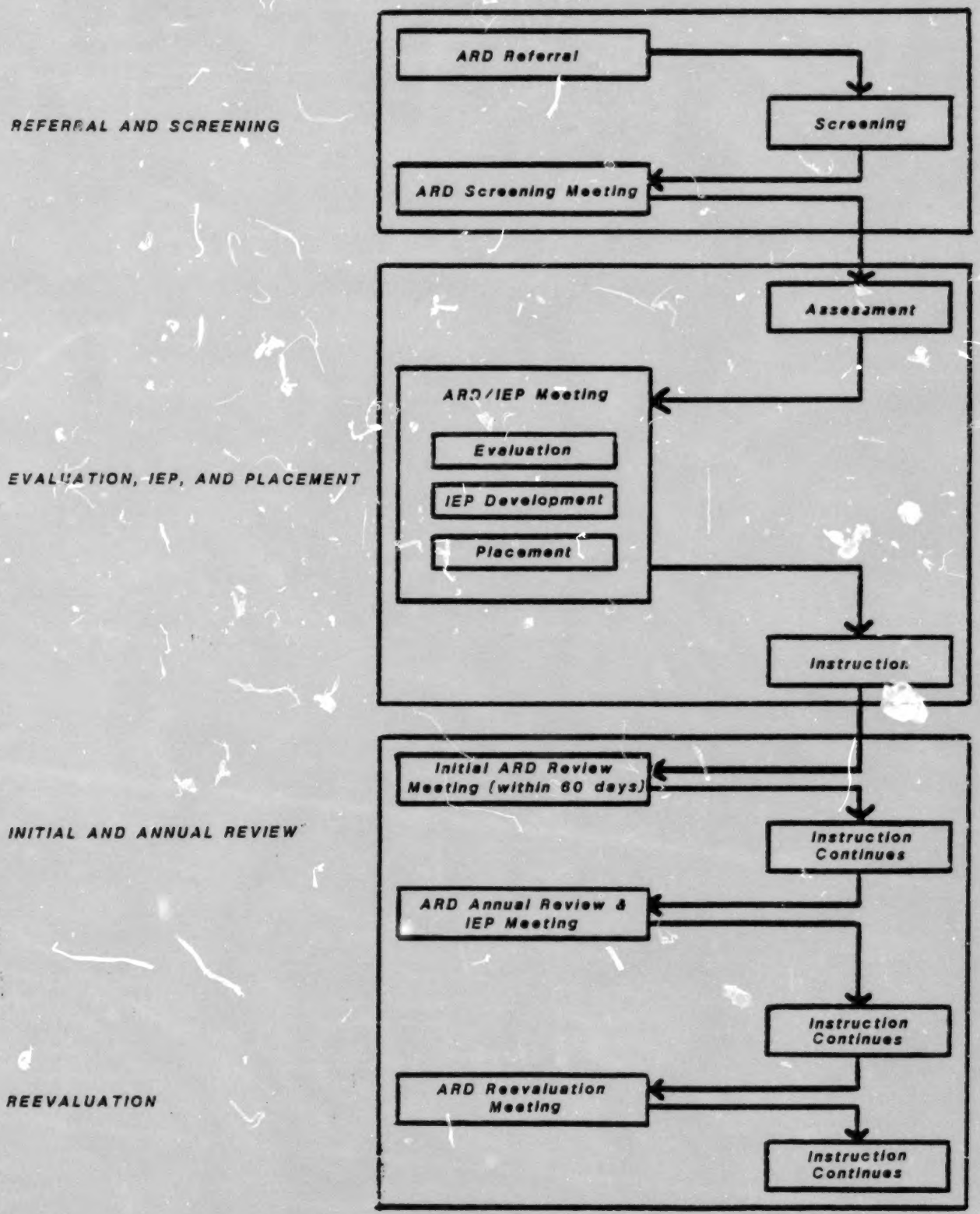
The Maryland Learning Disabilities Project has developed a standard model and sequence of activities to guide ARD decision making. The special education ARD process begins with referrals to the ARD committee. After the referral form is completed, accompanying screening information is compiled. The ARD committee then meets to discuss the information and to determine whether there is reason to suspect a handicapping condition.

If a handicapping condition is suspected, the assessments needed are identified and appropriate personnel are assigned to conduct the assessments. After the assessments are completed, the ARD team evaluates the information to determine whether a handicapping condition exists. If not, non-special education instructional or program modifications can be proposed. When a handicapping condition does exist and the student needs special education services, an individualized education program (IEP) is developed and appropriate placement is determined. Within 60 days of the initial implementation of an IEP, the ARD committee meets to review the appropriateness of the IEP. Instruction continues with necessary changes included. Thereafter, the IEP is reviewed and updated at least annually by the ARD committee.

Assessment is critical at each step of the special education ARD process. In the broad sense of the term, assessment is the process of gathering information upon which to make decisions and judgements. The kind of information that is needed will largely govern the types of assessments that will be administered.

Figure 2-1

THE SPECIAL EDUCATION ADMISSION, REVIEW AND DISMISSAL (ARD) PROCESS



Within special education there are six basic functions of assessment:

(1) Screening,
(2) Diagnosis of a handicap,
(3) Instructional Program Planning,
(4) Child placement,
(5) Assessment of individual student progress, and
(6) Program Evaluation.

In some cases an assessment procedure(s) may yield information which can serve several functions. For example, a thorough educational assessment serves as an integral part of not only diagnoses, but also instructional planning. The same data might also be used to compare the student's performance with future measures of the student's progress.

In other instances an assessment procedure(s) may focus on only one purpose, such as screening.

FIGURE 2.2

The Purposes of Assessment

Screening	The identification of those students who are "at risk" or in need of an evaluation for a suspected handicap.	1. Is there reason to suspect that the student may be handicapped? 2. If so, what areas need to be assessed to verify a handicap and to plan appropriate instruction?
Diagnosis	The verification of the existence of a handicapping condition.	Is the student a handicapped student?
Instructional Planning	The identification of the special education services needed by a handicapped student.	1. Does the student need specially designed instruction in order to meet regular education objectives? 2. If so, what is an appropriate instructional plan for the student?
Placement	The determination of the least restrictive appropriate placement.	To what extent can the student be appropriately placed in the regular classroom with non-handicapped agemates and support materials or services?
Individual Progress	The continuous monitoring of the learning progress of a handicapped student.	To what extent is the student making instructional progress?
Program Evaluation	The verification of the extent of program accomplishments compared to stated standards.	1. To what extent is the program addressing the needs of a group of students? 2. How well does the program compare to other programs?

Chapter III

THE ADMISSION, REVIEW, AND DISMISSAL SCREENING PROCESS

CHAPTER III

The Admission, Review, and Dismissal Screening Process

In the Maryland Learning Disabilities Project every student referred to an ARD committee goes through a standard screening process designed to efficiently gather and organize information about the student from at least four different sources:

- The referring teacher and where appropriate the student's other teachers
- The parent(s)
- A professional other than the referring teacher
- The educational records of the student

Considered separately, each contain relatively subjective, rather than objective, information. Considered collectively, the information can be used to corroborate areas of strength and weakness of the student in question.

The screening process assists the ARD committee by collecting and organizing relevant student information in a standard cross validated manner and identifying possible strengths and weaknesses. Using the screening information, the ARD committee is able to determine whether a full and individual preplacement evaluation is warranted and, if so, in which areas the assessment should focus. In this way systematic over or under assessment can be eliminated and assessments can be designed to the unique needs of the student.

Upon the receipt of a referral the ARD chairperson assigns a case manager who is responsible for insuring that the screening information is prepared for the ARD screening meeting. This screening information includes:

Referral. The ARD process begins with a referral to the special

education ARD committee (see Figure 2.1). Within the school the referral is typically initiated by the regular classroom teacher. However, anyone such as a parent, guardian, counselor, physician, concerned about a student may make a referral (see appendix for the Maryland Learning Disabilities Project Referral along with guidelines for completion).

The information obtained in the referral summarizes the reasons for referral along with the description of the student's strengths and weaknesses and an estimate of the student's performance in various areas.

Educational History. The educational history summarizes relevant information from the student's cumulative, confidential, and health files in a conveniently accessible format for members of the ARD team (see appendix for guidelines for completing this procedure). The educational history facilitates time management, completeness of information, and accuracy in the gathering of accumulated information.

Classroom Observation. The presenting problems from the referral form are used as the primary focus of the observation. Observations must include the areas of concern indicated on the referral. The information from the Classroom Observation is useful in cross validating perceptions as reported from other sources and in identifying other areas of possible strength and difficulty. (see appendix for guidelines for classroom observations)

Parent Questionnaire. The parent questionnaire is a systematic procedure for obtaining information on the child from the parents' perspective in relation to family, developmental, medical, and social behavioral factors. It often provides previously unknown information about the child, and it further cross validates areas of strength and weakness for the student from the parents' viewpoint. Since the parent questionnaire may reveal previously unknown information which could

influence the choice of assessment procedures, it is completed during screening or as early as possible in the assessment process. The major areas included in the parent questionnaire are family data, pregnancy and birth history, medical history, and social/behavorial characteristics (see appendix for the guidelines for the parent questionnaire). Ideally, this background information is obtained through a direct interview with the parent(s), e.g., just prior to the ARD screening meeting.

ARD Screening Meeting. Screening involves a concentrated effort by appropriate personnel to examine all the relevant existing information about a student, following a referral to the ARD committee (figure 2.1).

After the screening procedures are complete, an ARD committee meets to determine if further assessment is warranted, and if so, in what areas the assessments should focus based upon the unique characteristics of the student. If the presence of a handicapping condition is suspected and a full diagnostic "preplacement" assessment is warranted, the ARD committee arranges for the appropriate assessments and obtains written informed parental consent for the assessments. Should the screening data not support the suspicion of a handicapping condition, a full diagnostic assessment would not be warranted. In this case, the ARD committee recommends a modification of or continuation in the current program or considers referral to other alternative services.

Screening and the Student Profile

During the ARD screening meeting, the top section of the student profile is used to organize and analyze the information from the screening procedures to:

- Identify potential areas of strength and weakness,
- Determine whether full diagnostic assessment is warranted,

- Identify areas in which to focus the assessment, and
- Assist evaluators in selecting appropriate assessment procedures.

The various assessment factors arranged across the top of the form are defined in the appendix.

The section entitled Physical/Environmental contains factors which may be associated with underachievement in nonlearning disabled students. The Achievement/Performance section covers the seven areas of achievement described in federal regulations which are specifically compared to the student's educational expectancy in determining the existence of a "severe discrepancy." The Learning/Behavior section includes those factors which may be primary or contributing causes of a severe discrepancy in learning disabled students.

In considering the need for preplacement evaluation the ARD committee considers both strengths and problems identified during the screening. Are the screening procedures confirming each other with regard to possible strengths and problems? Are there indications of possible severe discrepancies? Where? Which are the factors which may be causing or contributing to the severe discrepancy(s)?

In designing the preplacement assessment the ARD committee should also consider those areas where information may be absent in the screening information. In which areas is more information needed? What assessment procedures will adequately provide the information needed for diagnosis, instructional planning, and placement and which personnel should conduct the assessments?

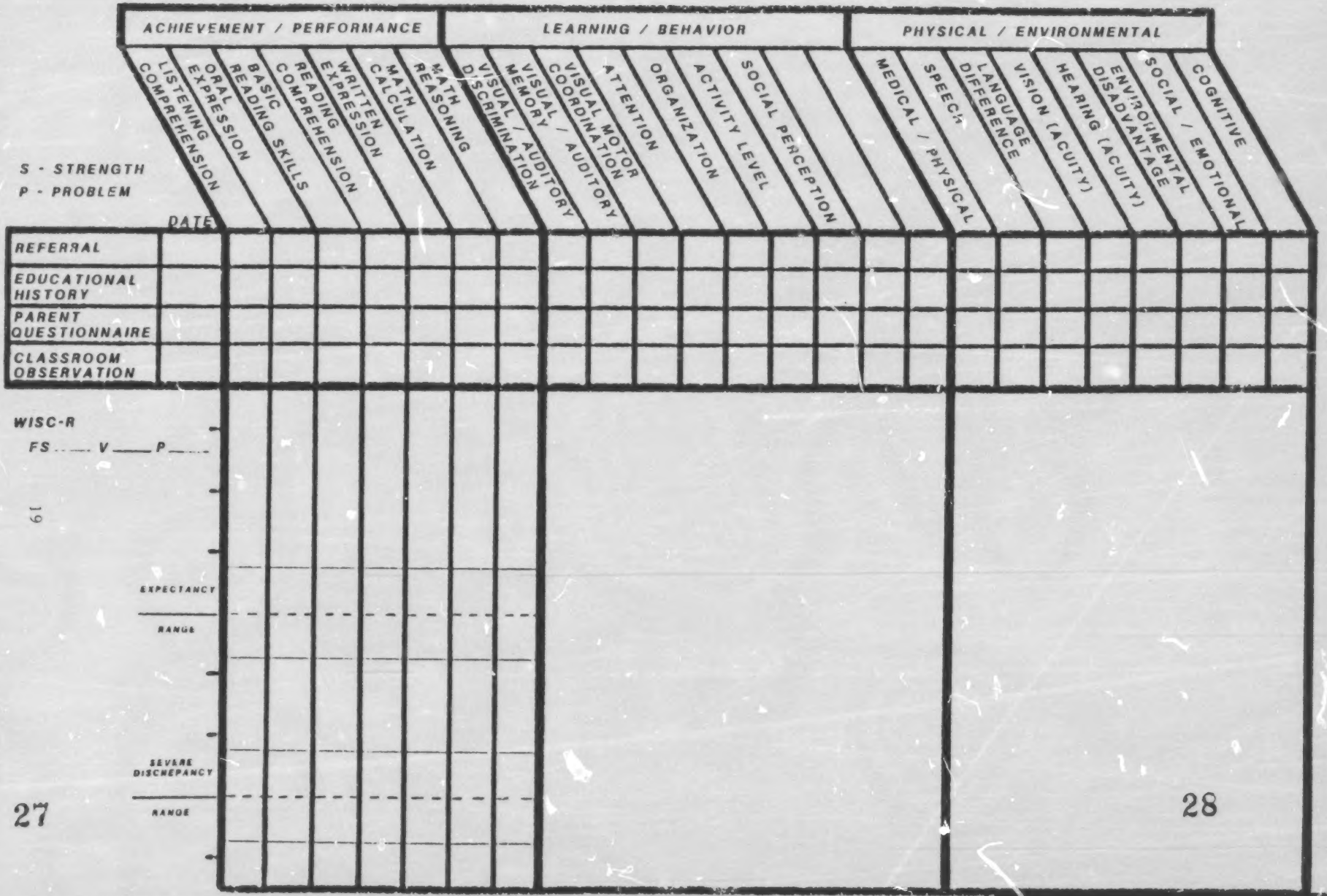
Figure 3.1

MARYLAND LEARNING DISABILITIES PROJECT
STUDENT PROFILE

STUDENT _____

D.O.B. _____ GRADE _____

SCHOOL _____



Chapter IV

THE ASSESSMENT OF EDUCATIONAL PERFORMANCE

CHAPTER IV

The Assessment of Educational Performance

During the "preplacement" evaluation, the purpose of providing an educational assessment is at least twofold. Educational assessment data is used to aid in the diagnosis of a handicap and, of equal importance, in planning for instruction. Test performance, approach to task, and problem-solving style when carefully analyzed may provide insight into other factors required for both diagnosis and educational planning, such as memory, perception, visual motor skills, attention, organization, etc.

Planning Assessment

The information from screening is used to identify the areas in which the educational assessment should focus. Information from the referral, previously administered group achievement tests, and other screening information are used in developing an assessment plan. If a specific academic area is reported to be an area of strength or is age/grade appropriate for the student, and this is collaborated, then it may be redundant to further assess in that area.

No one single instrument or battery of instruments is appropriate for assessing all students or all areas. The selection of the assessment procedure(s) is based upon the areas of suspected disability and the unique characteristics of the student. If available, a norm-referenced test(s) should be administered in the area(s) of suspected disability.

Norm-referenced tests are most useful in estimating the global performance of a student in relation to the tests' norming population. When selecting a test, one should consider the test's norming sample,

validity, reliability, and representativeness as it compares to the student in question. Norm-referenced test information should be supplemented by information from criterion-referenced tests. Although criterion-referenced information may be obtained from norm-referenced tests (e.g., item analysis, miscue analysis, etc.), there are tests designed to yield criterion-referenced information.

The seven academic areas are defined in the appendix. In addition, for each of the seven areas, there are tables which list many of the frequently used tests, the grade levels for which they are designed, the skills covered, whether the test is criterion or norm-referenced, the types of scores obtained, and additional comments.

When appropriate norm-referenced tests are not available, clinical judgement and informal assessments are used. This is particularly true in the areas of readiness skills, written expression, and listening comprehension. The evaluation team uses clinical judgement, based on the results of informal and criterion-referenced assessment, analysis of student work samples, the student's classroom performance, and observation, in determining the students academic achievement in any of these areas.

When norm-referenced tests are not available in a particular achievement area, the ARD evaluation team documents the following:

(1) The assessment procedures that were used in evaluating The student's performance,

(2) The results of the evaluation,

(3) The criteria that was applied in determining whether a severe discrepancy exists, and

(4) Whether a severe discrepancy is present.

The ARD evaluation team addresses each of these points when norm-referenced assessment procedures are not employed in determining whether a severe discrepancy is present. In the appendix are tables listing a number of screening and assessment instruments. Norm-referenced screening tests alone will never satisfactorily constitute a complete educational assessment. They should be in conjunction with other test data, including criterion-referenced information.

> "The purpose of the PIAT is to provide a wide range, screening, measure of achievement...When an overview of scholastic attainment is needed, PIAT scores will be directly useful. Where a more intensive study of an individual is required, these results can assist the examiner in selecting appropriate diagnostic instrument(s)...or the more precise measure at a particular level of achievement." (Dunn, 1970).

Evaluating Achievement

Norm-referenced tests that yield standard scores are most helpful in numerically comparing a student's actual performance with expected performance. When conducting an educational assessment, it is important to go beyond the numerical scores obtained. Information concerning the student's responses during testing, attention to task, motivation, problem-solving style, etc. are important in estimating whether the performance is an accurate representation of the student's achievement. Understanding how and why the student is not adequately learning is essential to diagnosis and sound educational planning.

In order to aid further analysis of the student's performance, the assessor will note specific incorrect responses and task analyze errors. This task analysis can also yield insights into why a student is having difficulty in a specific academic area. The assessor will often be able to use assessment data to analyze whether the student appears more

successful with tasks presented auditorily versus visually, tasks requiring an oral versus a motor response, concrete-operational tasks versus tasks requiring higher level abstract reasoning, etc.

In summary, the educational assessment is one of the key elements of an evaluation both in terms of qualitative and quantitative information. A thorough educational assessment helps with decision making regarding the existence of a handicapping condition. In addition, the assessor is able to gain information which is essential in planning a student's educational program.

Chapter V

THE ASSESSMENT OF COGNITIVE ABILITY

CHAPTER V

The Assessment of Cognitive Ability

Definition of Cognitive Ability

Cognitive ability is defined as a person's general overall capacity to adapt and function in the environment. Ability includes not only the student's cognitive abilities and adaptive behaviors in school, home and social relationships, but also his or her general intellectual ability as measured by individually-administered intelligence (IQ) tests (Michigan, 1980).

Assessment Considerations

The assessment of cognitive ability should include the results of an individual intelligence test. It should also include the student's adaptive skills, many of which are not measured by intelligence tests.

Intelligence tests are the best available indicators of intelligence and they continue to be useful predictors of academic achievement. Properly administered, normed, standardized, valid, and reliable instruments are a cornerstone for determining a student's ability.

The student's social adaptation, special skills, knowledge of his/her environment, and nonverbal problem-solving skills must also be considered in estimating ability. Validation of test measurements such as special academic skills, conversational fluency, and demonstrations of abstract reasoning should also be considered. It is not the sole responsibility of the school psychologist to obtain this information. However, the specific assessment and estimation of intellectual ability for children suspected of a specific learning disability handicap is the responsibility of the MSDE-certified school psychologist.

There are situations where an individual intelligence test would result in an invalid IQ score. Students whose behavior and activity levels

vary severely from the norming population may produce IQ test results that are confounded. The results are simply another measure of the disability. Discriminatory considerations inherent in test items and/or standardization should be viewed as a possible source of error and require greater care and professional judgement in the estimate of potential. The System of Multicultural Pluralistic Assessment (SOMPA) is one attempt at a corrective technique for some situations. Some individual intelligence tests are biased both positively and negatively toward specific socio-cultural ethnic groups, and it is essential that the assessor be aware of the possible biases of the instruments used. When it is determined that an instrument is significantly and consistently biased it should not be used or if necessary, used very cautiously for clinical judgement about specific skills. Global IQ scores (i.e., Verbal IQ, Perfomance IQ, Full Scale IQ) should never be used as the sole indicator of ability level. There are a number of characteristics of intelligence tests which speak against their use as isolated measures of ability level. For example, intelligence tests:

(1) Measure previous learning; therefore, they must be considered culture biased and are not always an index of "ability" or "potential" (Kaufman, 1979);

(2) Measure samples of behavior which are not exhaustive; thus, IQ scores are not, by themselves, estimates of one's total intellectual functioning (Kaufman, 1979);

(3) Measure intellectual processes in a fixed experimental condition and, therefore, do not indicate one's abilities when assistance and cues are provided (Kaufman, 1979);

(4) May provide an invalid indication of a learning disabled student's abilities, since the very existence of learning

disabilities may preclude the valid measurement of intelligence; e.g., global IQs would not provide a valid indication of ability level in students with discrepancies and variations in their cognitive performancce (Danielson & Bauer, 1978);

(5) Have not changed with the advent of important advances in psychology: the important contributions of such educational psychologists as Piaget, Gagne, or Guilford have not been reflected in intelligence test content or structure (Kaufman, 1979); and

(6) Have not incorporated important information provided by neuro-psychology: they do not fairly measure the specialized abilities of the cerebral hemispheres (the functions of the right hemisphere are especially under-represented), the integration between them, and the ability to shift from one hemisphere to the other, depending upon the nature of the task (Kaufman, 1979)[1].

Adaptive behavior scales, interviews, and observations as well as, social developmental history information can supplement and validate results from formal intelligence tests. Parents and persons working with a student can provide invaluable information about a student's ability that is not measurable in a testing situation. Diagnostic interview techniques are valuable, as are testing-teaching approaches that measure ability to learn, as well as learning style. Such ancillary techniques are important in situations where a standard IQ test is judged to be inappropriate or there is reason to believe that the results are invalid.

[1] Buesher, T. Considerations for identifying school-age children and youth with specific learning disabilities in Michigan; Gaylord, Michigan: Department of Education, 1980. p. 9.

Figure 5.1

Collaborative Sources for Cognitive Assessment

History	Observation	Interviews	Intelligence Test
Developmental Skills	Adaptive Skills	Conversational Skills	Aquired Knowledge
Special Interests	Special Interests	Special Interests	Verbal
Problem Solving	Problem Solving	Parent Impressions	Conceptual Skills
Creativity		Teacher Impressions	Spatial Skills
		Other's Impressions	Sequential Skills
		Adaptive Skills	

The evaluation should result in an overall cognitive estimate which emphasizes the highest level of estimated functioning. One common practice is to use the highest IQ score on the WISC-R, either Verbal or Performance, or in some cases the Full Scale.[1] However, again we are attempting to focus on total cognitive functioning, not just those behaviors numerically measured by standardized intelligence test. If there are indicators that suggest a higher ability/cognitive level than the standard IQ score, then the estimate should be incorporated into the estimate.

Estimating potential from one specific skill or trait is inappropriate. This is true with both subjective information and objective test data. As David Wechsler noted in his manual, "... the examiner should never estimate or infer a child's Full Scale IQ (or cognitive ability) from his scaled score on a single test, ..." (1974, p.26). Subjective information should be cross-validated and suggestive of generalized ability or global intelligence: the overall capacity of an individual to understand and cope with the world around him (and function in the learning environment).

[1] Generally, when the difference is larger than 12 points, the higher is used. When there is a less than 12 point difference, the full scale is considered to be the most reliable estimate.

Table 5.1
Comparable Ranges of Ability Level[2]

Range	Approximate Percentage Ranges	Approximate Standard Score Ranges
Superior/Very Superior	98+	130+
Above Average/Superior	90 - 97	120 - 129
High Average	75 - 89	110 - 119
Average	25 - 74	90 - 109
Low Average	10 - 24	80 - 89
Below Average/Borderline	2 - 9	70 - 79
Mentally Deficient	- 2	69 and below

[2] These ranges are indicated by standard scores in which average is 100, with a standard deviation of 15. While these standard scores are often used in intelligence tests, they are used here to provide a frame of reference to which one's ability level can be compared. They are not provided to encourage or recommend the use of global IQ scores as the sole and isolated measure of ability level.

Assessment Techniques

Cognitive assessment for youngsters who are suspected of having a specific learning disability is the responsibility of a qualified school psychologist. The assessment must be individualized and must at the very least provide the ARD evaluation team with an estimated range of cognitive ability that can be used by the team in considering whether there is a "severe discrepancy" between the student's cognitive ability and achievement.

The goal of all assessment procedures is to improve the probability of making a valid diagnosis and improve the recommendations for educational planning. Many errors have been made in this process by an over reliance on psychometric measures alone. School psychologists have the responsibility to go beyond psychometric measures of the student's intellectual, cognitive, perceptual, and motoric status. Furthermore, school psychologists must view these standardized measures—these samples of behavior—in light of the student's developmental, physiological, and family histories, as well as home and school environmental influences. Socio-cultural differences can be important in determining the cultural bias of the instrument with the specific student. Mercer (1979) has demonstrated that IQ tests are frequently culturally biased in favor of white middle class males and show a significant negative bias toward minority groups who are socioculturally different from the norm.

The Wechsler Intelligence Test for Children-Revised (WISC-R) is the most frequently used procedure by school psychologist when a specific learning disability is suspected. It ranks third among all tests and instruments in use by school psychologists (Goh, 1980).

The WISC-R has the advantages of containing distinct verbal and

non-verbal components. It has been extensively researched and, there are statistical corrections available for socioculturally different children, i.e., SOMPA. There are also procedures available for analyzing the subtests patterns that can be indicative of thinking styles common to children with specific learning disabilities as compared to able learners. The WISC-R provides a rich sample of behavior. The actual responses, the response patterns, the mannerisms, intonations, and styles of approach are crucial to interpretation of the objective data.

The Verbal Scale is highly influenced by language experience, measures cognitive linguistic behavior, and is strongly affected by past learning. With normal learners, it is the strongest predictor of educational success. The Performance Scale is more nonverbal, although some subtests are influenced by verbal mediation, i.e., picture completion and picture arrangement. The other four subtests are more clearly nonverbal perceptual motor and problem-solving tasks.

Kaufman's book Intelligent Testing with the WISC-R (1979), provides the school psychologist with an excellent guide to the strengths and weaknesses of the WISC-R and subtest analysis. However, as caution has been raised in relation to the validity of an IQ as a measure of cognitive ability, even further caution must be raised regarding "typical" subtest patterns.

It must be remembered that WISC-R and other intelligence tests are designed to measure general ability of one student as compared to a representative sample of agemates and not for subtest analysis or differential diagnosis.

Patterns of subtest scores or differences between Verbal IQ and Performance IQ can be diagnostic only if those differences or subtest patterns are significant in discriminating with minimum error normal

students from handicapped and one handicapped group from another.

Some research diagnosticians have focused on the difference between Verbal and Performance IQ (V-P IQ) scores which in combination with other frequently used assessment instruments are indicative of central nervous system dysfunction (Hartlage, 1982). However, the use of such a difference has been questioned by Kaufman (1979a) and Gutkin (1978), as well as others. The problem with using the V-P IQ difference in isolation for differential diagnosis has to do with the frequency that such differences occur within the normal population. As noted, Hartlage does not make definitive diagnostic conclusions from the V-P IQ difference alone. There is evidence that the Verbal scale provides an estimate of some left hemisphere cortical functioning (in most persons) and that the Performance scale provides an estimate of some right hemisphere cortical functioning. Rourke (1975) has shown the relationship of these scales to learning disabilities. Kaufman (1979) urges school psychologists to be familiar with the frequency of what may appear to be a significant difference between V-P IQ scores. Many diagnostic reports conclude that a student is learning disabled and has a weakness in left hemisphere language skills when the student's Verbal IQ is 95 and the Performance IQ is 110. The "significant difference" is found too frequently in the normed standardized sample of the WISC-R to be viewed as diagnostic of anything and is a particularly inappropriate conclusion when collaborative information is not found. A 25 point V-P IQ difference is infrequent enough in the normal population to warrant concern and with collaborative evidence may enable the school psychologist to formulate diagnostic hunches with psychoneurological implications. The unusual and rare 35 point difference between V-P IQ suggests more serious concerns which are almost always evident prior to the assessment.

The individual subtest differences that are diagnostically significant depend upon the reliability of the subtest and its relationship to the scale it is compared to. Kaufman (1982) reports that Information, Arithmetic, Digit Span, Picture Arrangement, Block Design, Coding, and Mazes are sufficiently robust to enable specific interpretation when the scaled scores are ±3 from appropriate Verbal or Performance scale score averages. He suggests ±4 scale score differences for specific interpretation of the Vocabulary and Comprehension subtests results. Similarities and Object Assembly defy specific interpretation for most age groups unless the scale score difference is greater than 6 points from the average scale score it is compared to. Discrepancies among subtests should not be given specific diagnostic meaning unless they exceed these limits, and even then they should relate to other collaborative information and assessment data. Kaufman stresses that statistical significance is important, but it is not sufficient for diagnostic decisions.

The tendency for a specific pattern of subtest scores to be found among learning disabled has been noted by Kaufman, as well as Rugel and Smith (1978). The cluster of Arithemetic, Digit Span, and Coding referred to as the Sequential factor or Freedom from Distractability factor (see Table 5.2) along with Information, seem to be the set of subtests that give some learning disabled youngsters more problems than other subtests (Kaufman, 1979). Other researchers have shown that this pattern is found among able students and also among emotionally disturbed , delinquent, and test anxious students (Henry and Whitman, 1981).

TABLE 5.2

WISC and WISC-R Subtest Regroupings (Factors)

Kaufman Factors

(1) Verbal Comprehension
- Information
- Vocabulary
- Similarities
- Comprehension

(2) Perceptual Organization
- Picture Completion
- Picture Arrangement
- Block Design#
- Object Assembly
- (Mazes)

(3) Freedom from Distractibility
- Arithmetic
- (Digit Span)
- Coding

Bannatyne Factors

(1) Acquired Knowledge
- Information
- Vocabulary
- Arithmetic

(2) Verbal Conceptualization
- Vocabulary
- Similarities
- Comprehension

(3) Spatial Ability
- Picture Completion
- Block Design
- Object Assembly

(4) Sequencing Ability
- Arithmetic
- (Digit Span)

The hypothetical basis for using scatter pattern analysis is that it demonstrates specific strengths and weaknesses in basic psychological processes that are used in academic learning and may assist in directing the student's instruction as well as in diagnosis. It is clearly understood by the qualified examiner that a specific pattern of subtest scores does not mean that a handicapping learning disability exists since a significant percentage of able learners also show this pattern. Nor should the absence of the ACID profile (Artihmetic, Coding, Information and Digit Span significantly lower than other factored sets of subtests) support an assumption that a student is not learning disabled. As noted previously, other studies have shown that patterns and profiles like the ACID profile are found among emotionally disturbed, delinquent and normal achieving students (Clarizio and Bernard, 1981). Test anxiety also appears to depress Arithmetic and Digit Span subtest scores (Lutey, 1977).

Kaufman's review of seven research studies measuring the relative degree of difficulty of WISC-R subtests for learning disabled is presented in Figure 5.2 which is a collapsed version of the more detailed results presented in the 1979 article. The combined N from these seven samples was 429 students whose mean full scale WISC-R IQ was 87.7. Keeping in mind the criticism of research on "learning disabled" samples that are defined by their having been labeled by a school system or clinic; (that they may not be significantly different from other samples of "normal" youngsters with a mean IQ of 87.7), there does appear to be a trend in these findings that resembles the Bannatyne profile.

Figure 5.2

WISC-R SUBTESTS DEGREE OF DIFFICULTY FOR LEARNING DISABLED STUDENTS

Rank Order of WISC-R Subtests*

Degree of Difficulty	Subtests	Factors
Easy	1. Object Assembly	
	2. Picture Completion	Spatial Ability
	4. Block Design	
	3. Picture Arrangement	
MODERATELY DIFFICULT	5. Comprehension	
	6. Similarities	Verbal Conceptualization
	7. Vocabulary	
	8. Coding	
	9. Arithmetic	Sequencing Ability
	10. Information	
HARD		

*Digit Span not included in analysis

This trend is summarized by Kaufman:

> "The most popular alternative to the Verbal-Performance IQ differences is Bannatyne's category system, an approach that has been applied to the data by Rugel (1974) and Smith, Coleman, Dowdecki, and Davis (1977a, 1976b) From this framework, reading and learning disabled students have strong spatial ability (Picture Completion, Object Assembly, Block Design), medium verbal conceptualization ability (Similarities, Vocabulary, Comprehension), weak sequencing ability (Arithmetic, Digit Span, Coding),and a limited fund of acquired knowledge (Information, Arithmetic, Vocabulary)."

Kaufman also cautions, "Group profiles are important, but they do not tell us about specific individuals within the group. We need to approach each individual profile as a specific interpretive challenge to be understood in the context of that student's particular cultural background and test behaviors." The subtest profile analysis can only be intepreted in the light of all the other information about the student's background, physiological well-being, social-emotional adjustment and behavior in the testing situation and other situations. Cross-validation of any one correlated component is the responsibility of the school psychologist, as well as the ARD evaluation team.

Although it is less frequently used in the diagnosis of learning disabilities, the Stanford-Binet Intelligence Scale is an equally reliable valid and standardized measure of intelligence. There are methods of "factoring" the Binet. The Sattler Binetgram (1974) divides the Stanford-Binet into Language, Concept Formation, Reasoning, Numerical Reasoning, Memory, Visual Motor, and Social Intelligence.

Other commonly used intelligence tests or measures of cognitive ability generally have a more limited range with school age children. However, in some situations these tests must be substituted for the frequently favored WISC-R. The Wechsler Pre-School and Primary Scale of Intelligence may be preferred for six-year-old students as well as

younger students. The McCarthy Scales of Children's Abilities is similarly appropriate. For children with verbal problems, the Columbia Mental Maturity Scale or the Leiter International Performance Scale have been used.

The Woodcock-Johnson Psycho-Educational Battery (W-JPEB) has cognitive and achievement components. Some school psychologists see it as an able addition for assessing students with suspected learning disabilities. Ysseldyke, Shinn, and Epps (1981) report that the Woodcock-Johnson Battery may sometimes produce false negatives. They report that "LD subjects" scored lower on the W-J Test of Cognitive Ability than on the WISC-R. They conclude, as Woodcock did, that it is more a measure of scholastic aptitude than general intelligence. This may be a concern where in all situations achievement measures and aptitude measures correlate too highly (above .90). It may produce two measures of one construct and thus two measures of the same disability or problem. Using such instruments to determine if the student's academic achievement is severely below the student's ability is, therefore, problematic.

Caution is raised in using measures that purport to measure intelligence but actually do not conform to the definition which supposes a general factor of intelligence and not a specific trait. Tests that measure only vocabulary or only information may have a high group correlation with the WISC-R, yet not measure general cognitive ability. In addition, such a test provides only a minimal sample of psychological functions that can help clinical diagnosis of the student's strengths and weaknesses.

Clinical Judgment

Every qualified examiner recognizes that assessment goes beyond the administration and scoring of standardized tests. The subjective diagnostic information gained during testing, through observations, limit testing, and "diagnostic teaching," is frequently very informative and useful in estimating a student's cognitive functioning. The interpretation of this qualitative information integrated into a holistic picture assists in determining diagnostic directions for the ARD evaluation team. There is frequently as much diagnostic information in the errors the student makes as in the problem-solving approaches and correct responses of the student. The student who gives the months of the year in response to a question requesting the names of the days of the week may have problems with categories, while the student who names three of the seven days may have retention problems. The student who reproduces a block design that is a mirror image of the model may have visual perceptual integration problems. Yet for the student that recognizes the error but cannot correct it, perception may not be the problem. The student who makes correct responses to this spatial relations problem-solving task but takes more time than the standardization permits may be more reflective than others and quite different from the student who cannot reproduce the designs at all.

The student who constantly asks if his/her responses are correct may have strong needs for approval or may have difficulties in evaluating responses. The student who responds to questions quickly, blurting out answers sometimes before the question is finished, may be an overly impulsive responder who needs to learn to listen, and reflect before responding. There are thousands of possible responses to the hundreds of test interactions and questions that can result in the same identical scores from significantly different response patterns and styles. It is

the pattern of responses validated by other sources of information rather than any discreet, atypical responses that can confirm clinical hunches.#

Being sensitive and aware of the student's mood, motivation, level of tension, and distractability will assist in evaluating responses as well as estimating the validity of the results. It is these factors, clinically judged in combination with test scores that enable school psychologists to suggest directions to the teacher and parent about techniques and approaches to academic problems. These recommendations should always be tempered by the examiner's self-questioning. How might this suggestion be misinterpreted (e.g., as being the only method of management or instruction)?

Chapter VI

THE ADMISSION, REVIEW, AND DISMISSAL EVALUATION PROCESS

CHAPTER VI

The Admission, Review and Dismissal Evaluation Process

After the assessment information is obtained the ARD Committee convenes to evaluate the assessment information. Among the many decisions to be made during the meeting are three which form the primary focus:

(1) Is the student learning disabled?

(2) What special education instruction is needed?

(3) Where is the appropriate, least restrictive environment?

Diagnosing Learning Disabilities

Specific learning disabled students have a severe discrepancy between academic achievement and cognitive ability caused by dysfunctioning basic psychological processes. One or more of the basic psychological processes are hypothesized to be deficient or non-functional in educational situations for the learning disabled student. Since these processes cannot be evaluated directly, formal and informal assessment procedures are used to indirectly analyze the functioning of these processes. Other possible primary causes for a severe discrepancy, such as sensory handicaps, emotional problems, or disadvantagement are analyzed. The diagnosis is made by an multidisciplinary team keeping in mind that:

- Many "high risk" infants become able learners.
- Early gross motor development shows little correlation with IQ at age 10 and is sometimes negatively correlated.
- Youngsters with abnormal EEG patterns can be able learners and disabled learners can have normal EEG patterns.
- Measures of cognitive ability and measures of achievement are so culture bound that some claim they are "useless" for prediction.
- Verbal and nonverbal measures of IQ are not mutually discreet.

- Many "able" learners have differences between Verbal and Performance IQ measures.
- Scatter patterns, intratest analysis on the WISC-R or Stanford-Binet that suggest a profile of learning disability, are found among able learners.
- Achievement tests seem to produce inflated scores when compared to classroom functioning for some students and the reverse for others.
- Perceptual tests have poor validity and reliability.
- Observations are strongly influenced by "set" bias.
- Estimated incidence rates for learning disabilities vary from a low of 3 percent to as high as 30% percent of the school population thus making "discrepancy" cut off points difficult to establish.
- Emotionally disturbed students may exhibit patterns of behavior that are very similar to the patterns viewed as typical for learning disabled students.
- The type of handicap diagnosed is sometimes dependent upon who does the assessment, what the referral problem is, or what resources are readily available.
- Team decisions are frequently made by the team agreeing with a perceived "expert."

Decisions must be made with care and sensitivity since labeling a student as specific learning disabled when the student is an able learner may cause harm in self-concept and experience, as well as, negatively influencing the responses from others. Likewise, treating a learning disabled student in need of special education as an able learner may result in frustration, traumatic stress, and continuing failure for the student.

One of the purposes of a multidisciplinary diagnostic approach is to compensate for the weaknesses in diagnoses which result from relying on only one person's assessment or single assessment measures. The need to look at all relevant data sources, objective and subjective, and to use the clinical sensitivities of the team members in going beyond numerical scores, beyond numerical "severe discrepancies," is crucial. The ARD

committee must not see numerical measures as being more valid than that which cannot be numerically measured. The ARD committee must strive to validate all measures of underlying psychological processes through comparisons of behaviors, observations, and other information making sure not to handicap the student when other environmental factors are the cause of the problem.

ARD Evaluation Meeting and the Student Profile

At the ARD evaluation meeting, the Student Profile is used to:

- Consolidate the assessment information,
- Visually profile the student's achievement/performance,
- Compare what the student should be expected to achieve with the students current functioning,
- Form hypothesis about factors which may be causing and/or effecting a severe discrepancy,
- Identify strengths,
- Identify special education needs, and
- Identify instructional approaches and educational strategies.

During screening, problems and strengths are identified through the information from the educational history, parent interview, referring teacher and specialist's observation(s).

Once the assessment data has been gathered, the evaluation profile section of the Student Profile is used by the ARD committee as a diagnostic evaluation process. Both numerical scores and qualitative information are recorded. Specific information in relation to stengths, weaknesses, and hypothesized "causes" are noted. This profiling is not restricted to a standard metric. There are some areas in which psychometric measurements are not available and/or the professional judgement and sensitivity of the qualified evaluator is more diagnostically useful. In profiling a student's performance, the ARD committee uses

information in standard scores when possible and appropriate, but also goes beyond these standard scores to include the professional judgement and insights of the appropriate evaluators.

The cognitive/behavioral section of the Profile is used by the ARD committee to form hypotheses regarding the factors which may be influencing the underachievement of a learning disabled student. Additional spaces are provided for other "behaviors" that are not listed but which the team sees as important.

The physical/environmental section of the Profile is used by the ARD committee to analyze other possible "causes" for a severe discrepancy. It is the intent of the Profile to provide a structured guide, not a statistically rigorous mechanism for diagnosis.

A student with a severe discrepancy should not be diagnosed learning disabled if there is a primary causal link between the achievement problem and an exclusion factor explaining the existence of the problem. The possibility of such a relationship may be suspected from the information gathered in the screening. For example, a sixth grade student who has been in seven different schools, two of these more than once, who comes from a single parent family living in public housing may be having achievement problems because education has been interferred with by economic stress combined with poor educational continuity. It may be discovered during assessment that this student has had a structured basic skill preparation in spite of the many changes. The student may have had supportive assistance through Title I and individual tutoring. Head Start and day care programs may have supplemented early experiences. These hunches would need to be verified during the assessment by a close analysis of the educational history, attendance records, curriculum techniques, and approaches used in the many schools attended.

It cannot be assumed that persons with other handicaps or disadvantages are not learning disabled. Extrinsic influences and intrinsic conditions other than central nervous system (CNS) dysfunction are excluded as primary causes for the severe discrepancy, but the children with multiple intrinsic and extrinsic problems are not exempt from learning disabilities. Mentally retarded, deaf, and emotionally disturbed students may also be learning disabled but such incidences of multiple handicaps would be viewed as rare. Disadvantaged youngsters may also have CNS dysfunctions that result in learning disabilities.

The achievement/performance section of the profile can be completed in conjunction with Table 6.1 to determine the range of expentency level and range of cut off scores and recording those scores in the appropriate achievement category. For example, a child with an estimated IQ of 87 would have an educational expectancy range of 87-92 and a cut off achievement score range of 64-69. Achievement test results would then be recorded accordingly. For example, PIAT Reading Recognition SS/94, Reading Comprehension SS/88 and a Mathematic SS/70, Woodcock Reading Mastery Test Word Identification SS/89 and WRAT Math SS/71. The math standard scores would be placed under math areas at about the -1.5 SD level. The reading test scores would be placed near the expetency level under the appropriate reading categories. Note that both standard scores in Mathematics of 70 and 71 used in the example are beyond the cut off standard score range in Table 6.1 for the IQ of 87 (achievement cut off range 64-69). However, these scores are close enough to be seen as severe. These particular scores were used to emphasize the estimating aspect of these scores. They should not be applied rigidly. A standard score of 77 or 80 would be far below grade level but not be severely discrepant for a youngster with an expectancy of 87.

If the qualitative information from a variety of sources suggests that this problem is intrinsic rather than extrinsic to the child and not primarily of emotional origin or physical, e.g., vision/hearing then the evaluation team could appropriately see this child as having a specific learning disability in mathematics.

Severe Discrepancy: Guideline for Computational Estimate

Crucial to the diagnosis of a learning disability is a severe discrepancy between measures of ability and achievement. There have been many formulas for developing a number to quantify this discrepancy. Many of these methods are based upon grade levels. Typically, two years below grade level has been viewed as severe, however, two years below first grade is quite dramatic. Two years below eleventh grade has less meaning and is less "severe." Even when intelligence is taken into consideration, grade levels are not comparable to age-based standard scores such as IQ scores. Achievement age-based standard scores should be used for numerical estimates of severe discrepancy.

Some formulas for estimating an expectancy age are based upon IQ, chronological age, and number of years in school. Bond and Tinker (1957) and Johnson and Myklebust (1967) have developed formulas that combine these elements. Many of the formulas over identify students from various IQ groups because they fail to take into consideration the reliability of the instruments and the regression toward the mean that is expected in prediction when tests have a degree of error. A formula which compares standard scores (IQ) and grade expectancies is not sound. McLeod (1979) developed a procedure taking regression and reliability into account in determining severe discrepancies. Regression depends upon comparability of the norms of tests used in the procedure as well as the correlation between the achievement and aptitude instruments and the reliability of each.

Many achievement tests that are commonly used have adequate reliability coefficients and are correlated significantly with the WISC-R.

Table 6.1 is a guide which enables ARD committee to estimate a severe discrepancy score taking regression into consideration. It is based on standard scores (mean 100 standard deviation 15). The range of scores are based upon a 6 percent severe discrepancy incidence rate. Table 6.1 is only a guide not a criteria.

The decision as to which scores to use when variable achievement scores or aptitude scores are obtained is an interesting clinical dilemma. If the scores on achievement tests vary "significantly," the team may wish to choose the more reliable instrument or analyze the difference by looking for collaborative information, e.g., classroom functioning. For example a second grade average IQ student who receives a WRAT reading standard score of 98 and a standard score of 69 on the reading comprehension section of the Woodcock Reading Mastery Test may be seen as having inconsistent data or good word reading skills and poor reading comprehension skills. There is a need to analyze the content of the items, types of errors, as well as other factors, e.g., the testing conditions, and to verify the information using criterion referenced instruments.

When there is a difference between the obtained Verbal and Performance IQ, judgement needs to be used to determine the most valid estimate. Myklebust (1976) supports using the higher of the V-P IQs. Gore (1982) feels that since the WISC-R Full Scale IQ is the most reliable of the three IQs, the highest of the three (V-P-FS) should only be used when the difference is significant, that is, greater than 12 points. Again clinical judgement must be used. The subtest pattern on the WISC-R may suggest that the Verbal IQ is depressed primarily because the child had significantly low scores in information and arithmetic. Yet, when the V-P IQ difference

TABLE 6.1

A GUIDELINE FOR NUMERICAL COMPARISONS
OF EXPECTED ACHIEVEMENT AND ACTUAL ACHIEVEMENT

I.Q. Range	Educational Expectancy** Range	Severe Discrepancy Cut Off Score Range*
130 - 139	120 - 128	97 - 105
120 - 129	114 - 120	91 - 97
110 - 119	107 - 113	84 - 90
100 - 109	100 - 106	77 - 83
90 - 99	94 - 99	71 - 76
80 - 89	87 - 92	64 - 69
70 - 79	80 - 86	57 - 63

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* Cut off scores are 1.5 SD below the Educational Expectancy score where the MEAN is 100 and the SD is 15. The measures should be reliable (.80 or better), properly administered, appropriately normed and standardized and positively correlated.

** Derived from McLoed, J. Educational underachievement: Toward a defensible psychometric definition. Journal of Learning Disabilities, 1979, 12, 322-330.

is only 10 points, rational analysis would suggest the use of the higher estimate.

There are cases in which there are no tests which satisfactorily meet the assumptions of the severe discrepancy guideline. Specific age groups defy accurate measurements in specific areas, e.g., written (language) expression. The Test of Written Language (Hammill & Larsen, 1978) has no norms for second graders and the normative sample is not stratified to conform to census data. Adequate norm-referenced measures of listening comprehension or oral expression for children over 11 years old are difficult to find. In such cases the best clinical estimates based upon collaborative information must be determined by the appropriate ARD team member.

Processing Deficits in the Assessment of Learning Disabilities

A learning disability is a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written. This reflects the commonly accepted hypothesis that the basis of a learning disability is a dysfunction of an individual's ability to process information.

The capacity to assess processing abilities is considerably compromised by the lack of reliable and valid assessment procedures. There are two primary reasons for this circumstance. First, while the consensus among professionals in the field of learning disabilities is that dysfunctions in processing abilities are the basis for learning disabilities, the field has not been able to agree on a single theoretical base of information processing. As a result, there are many theories, but no one theory has been commonly accepted as the theory. Second, the instrumentation currently available for assessing processing abilities has proven to lack adequate reliability and validity.

Given these circumstances, the criteria for identifying learning disabilities does not require the ARD evaluation team to document that a processing disorder exists. This should not be interpreted to mean that the team should not consider processing abilities of a student. Information in such areas may very well provide hypotheses concerning factors effecting a severe discrepancy which may in turn be helpful in designing instruction.

Exclusionary Criteria

The severe discrepancy between achievement and intellectual functioning must not be primarily attributed to emotional disabilities, visual, hearing, or motor handicap; environmental disadvantage; cultural differences; or economic disadvantagement.

In the event that the screening results of any of the exclusionary areas are suspect as a possible source of the pupil's learning problems, an assessment of that area should be conducted as part of the preplacement evaluation.

The ARD evaluation team should consider a pupil's personal adjustment and interpersonal relationships. This would include consideration of the student's social relationships with peers, siblings, parents, teachers, and other adults, and behavior in various settings including different settings within the school, the home, and the community.

Basic data on a pupil's behavioral status may be gathered through behavior checklists and rating scales, parent and teacher interviews, and structured observations. If there is any question of whether the pupil's primary handicap is a learning disability or an emotional disability, a comprehensive and systematic evaluation of the students emotional status should be included.

Environmental and cultural factors should be considered in selecting

the tests and procedures to be used in the evaluation and interpretation of the results. Depending on the pupil's ethnic background and acculturation, it may be necessary to consider whether the tests items and normative data present an unfavorable bias to the pupil. The consideration of environmental and cultural factors in this report is critical since bias in tests and evaluation procedures can result in the inappropriate inclusion or exclusion of students from special education.

If there is any reason to suspect that either of these factors could account for the pupil's learning problems, a family assessment and history should be conducted as part of the comprehensive educational evaluation; this may include structured interviews with the pupil and the parents and home visitations.

For pupils whose dominant language is not english, the evaluation procedures must accommodate this difference. If not clear, the dominant language should be determined through interviews with family members. The pupil should be assessed in his/her language by an evaluator who speaks the students native language. If the student is bilingual or dominance is mixed, the pupil may need to be assessed in both languages. If neither of these approaches can be used, the pupil should be assessed with nonverbal tests or with tests developed in english but administered in his/her dominant language.

A student with a history of frequent or extended absences from school without the provision of an educational program, or with history of frequent moves from one school to another, resulting in a discontinuity of instruction, should not be considered learning disabled unless other general education, compensatory, or remedial programs have been provided the student and found to be inadequate.

Chapter VII

DISTRACTORS IN THE DIAGNOSTIC PROCESS

CHAPTER VII

Distractors In The Diagnostic Process

Within the total evaluation process there are many sources of error or influences which can distract from valid decision making.

In the past, a great deal of energy has been spent on attempting to find the test battery or algorithm which will allow evaluation teams to identify learning disabled children conclusively. The tests themselves and their resultant numbers contain only some of the sources of possible error. How the assessment information is used throughout the entire process contains other sources of possible error. The characteristics of students (i.e., race, sex, attractiveness) can be sources of error; the decision-making style of the evaluation team may be a source of error; the attributions and dynamics between individuals in an ARD committee can be a source of error; administrative procedures and de facto administrative constraints can be further sources of error; parental pressure can also be a source of error.

The following is a description of some child, parental, group process, individual team member, local education agency, and test distractors. The descriptions are not exhaustive, yet they provide a sampling of the distractors to sound decision making regarding the diagnosis of learning disabilities.

Frequently, when distractors are present, the ARD team is unaware of their influence. By becoming sensitive to such factors ARD teams may be better able to realize when their decision making is being adversely affected.

Student Distractors

Student distractors are those characteristics unique to students which may cause inaccurate diagnostic decisions. Educators working with students may tend to empathize with their problems and concerns. They may become involved to the point that they fail to objectively look at the student's abilities, skills, and performance with regard to the specifics of a handicap like learning disabilities. In such instances, a student may be labeled as learning disabled because the student is experiencing educational difficulties.

- The student is black, low SES, female or unattractive, therefore the student is learning disabled; or therefore, he/she is not learning disabled.

It is important that ARD team members be aware of individual biases or expectations. Such influences can interfere with decision making regarding either diagnosis or placement. While environmental/cultural factors must be ruled out as the primary reason for the student's learning problem, culturally or environmentally different students should automatically be included or excluded from consideration of learning disabilities.

Parent Distractors

Parent distractors are those unique influences of parents which may cause inaccurate diagnostic decisions.

- His/Her parents say he/she is learning disabled; therefore, he/she is learning disabled.
- His/Her mother is helpless; therefore, he/she is learning disabled.
- The parents have had him/her evaluated privately and the summary says he/she is learning disabled; therefore, he/she is learning disabled.
- The parents with their attorney are pressing for special education services; the path of least resistance may be to identify the student as learning disabled; therefore, the student is learning disabled.

It may be tempting for an overwhelmed or apprehensive ARD committee to overidentify learning disabilities in an attempt to follow the path of least resistance. One circumstance where this may not be an unusual occurrance is the group meeting attended by school personnel and parents with their attorney. Confronted by parental insistence that the school has been ignoring their child, has been negligent in identifying needs for special education services, or has failed to educate the child so that academic progress meets parental expectations, even the most objective staff member may waiver. Add to this the presence of a legal representative citing the law and its implications, and the easiest way to avoid an adversary relationship may be to succumb to the wishes of the parent.

Group Distractors

The decision-making style of the ARD committee may itself become a distractor. There are any number of variables associated with group processes. These factor variables the interplay between the personalities and professions within the group. In some groups, members are comfortable presenting different information or opinions. In others, there may be an overriding pressure to conform.

Bion (1948) has studied the group as being more than just the sum of its members. A group mentality emerges as the members bring their individual needs and desires to the group. Herbert Thelen (1954) has extended Bion's idea into patterns of behavior which result from the group mentality.

Fight-flight is a pattern which describes the group's desires to escape the tasks with which they are faced by fighting either the task or themselves or by avoiding the task.

. We need to know...therefore ,not LD (or when in doubt, keep testing).

Even after thorough assessment, the group may decide that there is not enough information to make a decision. The staff may feel that referral information from the classroom teacher may be available but not specific enough or observations and student work samples may be missing. There may be gaps in the educational, medical, or developmental history of the student. They may feel that educational, psychological, or speech/language assessments lack certain test scores or interpretations. While ARD evaluation teams need adequate data to make decisions, an unpleasant decision will most often not be avoided by giving one more test. Certainly, teams should not make decisions based on inadequate data, but teams need to be aware that the prolonged search for data can result from "flight" from the task at hand.

Another pattern, dependency, represents the group's need to remain dependent on a leader. This does not have to be the group's appointed chairperson but may be any member that emerges as a leader.

. The learning disabilities 'expert' in the group (the psychologist, special educator, etc.) says he/she is (or is not) learning disabled; therefore, he/she must be (or not be) learning disabled. -The Expert Syndrome

By depending on the expert's decision without considering the data, the child is being done a disservice. The "expert" may choose to be the guiding force of the team or the group may place the "expert" in this position. When the group is dependent on an "expert", open team communication and decision making may suffer.

Individual Personnel Distractors

ARD committees are made up of individuals from a variety of disciplines. Any of these individuals may be a source of distraction.

- I am tired; therefore, I agree.
- I've tested him/her; therefore, he/she is learning disabled.
- I don't have any time to test; therefore, he/she is not learning disabled.
- I am the expert in learning disabilities and I think the student is learning disabled; therefore, the student is learning disabled.

As groups interact, some individuals may be more vocal or appear more knowledgeable than others. Other individual team members may tend to be routinely persuaded to this individual's point of view.

- "The student is learning disabled!" says the school psychologist, resource teacher, or other specialists in an authoritative voice; therefore the student is learning disabled.

A person who uses status or position to influence a diagnosis may be a source of distraction. The diagnosis is a team decision in which each person has information to present as a part of the evaluation. No one person is qualified to make a diagnosis of learning disability. Although leadership is necessary, biases in leadership can be distractors.

1) The team chairman may exert strong influence over the group and may have a belief system which supports one of the following:

- I don't believe in learning disabilities; therefore, the student cannot possibly be learning disabled.
- This student is hard to teach; therefore, he/she must be learning disabled.
- This student is a behavior problem; therefore, he/she must be learning disabled.
- This student comes from a low socio-economic situation; therefore, he/she must (or must not) be learning disabled.
- The only way to get this student out of this school is if he/she is learning disabled; therefore, he/she is learning disabled.

The team chairman may not even realize that these beliefs may influence the ARD team.

2) Frequently, the psychologist is looked up to by all of the team members. He/she is seen as possessing ultimate knowledge and expertise. Some biases which might occur from this attributed esteem include:

- The psychologist says the student is learning disabled and everyone automatically agrees. After all, he/she is the expert. -The Expert Syndrome
- The psychologist reports that there is or is not a discrepancy between verbal and performance IQ scores, or between subtest scores; a decision is made regarding whether the student is or is not learning disabled based solely on this information.
- The psychologist does not have time to test; therefore, the student is not learning disabled.

The psychologist has important information to share with the team, not only in terms of cognitive ability but also regarding the student's learning strengths and weaknesses. Certain psychological processes may appear to be deficient given psychological assessment results and observations. The psychologist is responsible for ruling out the existance of emotional factors as the primary reason for the student's learning problems.

Good decision making regarding learning disabilities also includes organized, comprehensive educational assessment data. An emerging picture of the student's approach to academic tasks, areas of mastery within the academic areas, as well as levels of academic achievement must each be considered. The classroom teacher also has essential diagnostic information.

3) The special education/learning disabilities teachers may also be the source of biased leadership. The group may feel that he/she is the only one who fully understands learning disabilities. Some biases from special

educators might include:

- He/she is an underachiever; therefore, he/she is learning disabled.
- He/she failed the Wepman (or any one test); therefore, he/she is learning disabled.
- I know I can help him/her, therefore he/she must be learning disabled. -The Statue of Liberty Syndrome
- The learning disabilities teacher reports that the student is learning disabled and everyone automatically agrees. After all, he/she is the expert. -The Expert Syndrome

As has been noted, no one individual can make the diagnostic decision regarding learning disabilities.

Local Education Agency Distractors

There are times when the policies, procedures, or capacities of our individual systems may affect our decision making.

- If a student is two grade levels below grade expectancy, he/she is learning disabiled.
- All that is needed is a two stanine difference on group standardized tests of ability and achievement . We have that data, therefore; he/she, is learning disabled.

In such instances an ARD committee fails to consider the diagnostic information carefully. Frequently, the assumption is that the student needs help, we have room in special education; therefore, we will call that student learning disabled to get the student into special education. This distractor can be coupled with other distractors.

- We need three more students to justify a special education position; therefore, the student is learning disabled.
- There is no more room in special education, therefore he/she is not learning disabled.

When considering the diagnosis of a learning disability, the ARD

team should guard against being influenced by the availability of services or by the need to increase the number of learning disabled students in the school to justify a position. In such instances, the ARD team may be distracted by factors which result in less valid diagnosis. It is unethical for an ARD team to identify a student as learning disabled when the data does not support such a decision. Conversely when there is no more room in special education, the ARD team has a responsibility to consider the existence of a handicap, and make the diagnosis if the student is learning disabled.

Test Distractors

Many of the tests administered may themselves serve as distractors. There are basically two types of error to which test themselves are subject: unsystematic and systematic error.

When an assessment procedure contains unsystematic error, it is unreliable and the measure obtained may be too high one time and too low the next. Systematic error in an assessment procedure or instrument is called bias. Bias in an assessment procedure occurs when a test either consistently inflates or consistently deflates the resulting measures for certain groups of students. This may happen when either students have not had a similar opportunity for learning experiences which the tests assume or when the group of students used to norm a test is not a representative group with which to compare the student being assessed.

Both systematic and unsystematic errors should be considered in the evaluation.

- The student failed the Wepman; therefore, he/she is learning disabled.
- The student obtained X score; therefore, the student is or is not learning disabled.
- The WRAT says the student is learning disabled; therefore, he/she

is learning disabled.

Not only must the accuracy and usefulness of each of the resulting scores be scrutinized, but also the relatedness and the dynamics of the scores.

In diagnosing learning disabilities the obtained scores of a student are just a part of the process. The diagnosis of a learning disabled student should never be based on only one test instrument or upon uncollaborated information.

- He made two mistakes on the Bender; therefore, he is learning disabled.

Many students who have numerous errors on the Bender have other problems such as a lack of experience in drawing designs and using pencils. Mercer (1980) has demonstrated that there are cultural influences to the number of errors on the Bender.

There are some types of errors that are more qualitatively significant than others. Furthermore most errors are of questionable importance in young school age students. The Bender is best used with youngsters of 7.5 and under 10.5. Perseveration, destruction of the gestalt, rotations, and reversals are more significant than other errors, particularly after the age of eight. Paradoxically many older (teenage) children with serious writing problems are able to complete the Bender without any errors.

- A student (8 years old) is functioning on the 6 year old level on the Bender Gestalt (BVMGT) and therefore has a visual motor problem and is learning disabled.

The mean number of errors on the Bender (Koppitz norm) for an 8-year-5-month-old is 4.2 with a standard deviation of 2.5. The mean for a 6-year-6-month-old student is 7.2 with a standard deviation of 3.5. An 8-year-old student with a score of six errors would still be within one standard deviation of his/her peer sample. The norms for the Bender were not

developed to be used in this way. A student should be compared to that student's normed peer age group. There is no assumption that one standard deviation means that the student has visual-motor perceptual problems.

. There is a 15 point difference between the Verbal-Performance IQ and the WISC-R. Therefore the student is learning disabled.

Kaufman reports that one out of every four students have 15 point differences between the Verbal and Performance IQ. Correlational data have been used to develop causal conclusions. The assumption that this frequently obtained difference is indicative of learning disability has been discarded as a valid conclusion. Even a difference of 25 points may have little impact on academic functioning and mean nothing more than what is reported.

There should be consistent effort on the part of all persons involved to avoid causal conclusions from any specific piece of information. Patterns and cross validation may help direct the team to more valid diagnosis.

. Tests tend to inflate scores at early grade levels.

In order to identify a learning disability, several assessment procedures must be conducted. One of these procedures includes an educational assessment. Standardized achievement test data must be interpreted with caution due to inherent limitations related to statistical and content characteristics of any given test. Achievement test results must be considered in light of what behaviors were necessary to arrive at a response and how many samples of behaviors were required for any given score (Salvia and Ysseldyke, 1981).

At early grade levels, many standardized instruments tend to overestimate a student's level of proficiency. A few examples will illustrate the need for caution in the evaluation of young students.

Many test manuals remind the user that scores near the lower and upper limits of a test have larger standard errors of measurement than scores near the middle of the scale range. Thus, one will be less likely to take an obtained grade level score of 1.9 for a six year old student who has completed first grade as an indication of grade appropriate performance unworthy of further investigation.

A review of individual test items will reveal that in many instances scores increase at monthly intervals with correct responses to only one or two items. This tends to rapidly inflate scores at both lower and upper limits while only very superficially sampling behavioral skills.

Because all these factors tend to be more prevalent at lower limits of tests, caution must be used in learning disabilities screening and assessment of children at early grade levels.

Chapter VIII

DESIGNING INSTRUCTION FOR LEARNING DISABLED STUDENTS

CHAPTER VIII

Designing Instruction for Learning Disabled Students

A preliminary draft paper on designing instruction for learning disabled students has been developed and is presently being analyzed, expanded, and field tested. Final guidelines for the instruction of learning disabled students are still in the process of development. Teaching strategies have been delineated into three primary instructional focuses: developmental, remedial, and adaptive. The intent is to identify effective teaching strategies and develop procedures that effectively form a bridge between the assessment information and the myriad of teaching strategies and models. It is clear that what is taught is as important as how it is taught.

The ultimate goal of instruction of learning disabled students is mastery of the approved regular curriculum goals and objectives. Learning disabled students frequently need supplementary instruction to either remediate deficits or effectively adapt by using learning strengths to circumvent disabilities.

The assessment process should result in information which identifies:

- WHAT is to be taught;
- HOW is it to be taught;
- HOW MUCH of the regular education program the learning disabled student can appropriately be involved in;
- HOW MUCH of the special education program the learning disabled student requires in order to acquire the educational goals of the regular curriculum identified as appropriate;
- WHO are the direct and indirect providers of the instructional program; and
- WHO are the direct and indirect providers of the instructional

program; and

- HOW regular and special education need to interface to provide the supportive environment for the student to acquire appropriate skills, and/or develop the appropriate adaptive strategies.

The Student Profile and IEP Development

The ARD team uses the student profile to identify those areas in which special education is needed. The information on the factors which may be affecting underachievement can be used to form hypotheses concerning factors influencing the discrepancy and in selecting the appropriate services and teaching strategies to address the needs of the learning disabled student.

Selecting Education Approaches

The general goals and objectives of education for learning disabled students are the same as for all students. Since learning disabled students to varying degrees have difficulty under normal learning circumstances, they frequently require supplementary special objectives and teaching strategies or methods. There are few generalizations upon which to depend in planning the instructional focus for a heterogenous group of learning disabled students. The multidisciplinary instructional planning personnel must consider the unique constellation of needs of each learning disabled student in planning not only what is to be learned, but also how it can best be learned.

Based upon an analysis of the basic intents of teaching and for the purpose of initial simplicity and clarity, project personnel have categorized the teaching strategies into three groups:

DEVELOPMENTAL TEACHING

Developmental teaching is the content, methods, materials, and management techniques designed for use in regular education and approved by the LEA for normally developing students. Developmental teaching is sometimes used with the learning disabled students with appropriate modifications to achieve those goals of education established for all students.

REMEDIAL TEACHING

Remedial teaching is the content, methods, materials and management techniques developed to correct a learning disabled student's specific areas of disability or eradicate a deficit.

ADAPTIVE TEACHING

Adaptive teaching is the methods, materials, content, and management techniques developed to circumvent a learning disabled student's specific area of disability using area(s) of ability.

Adaptive teaching takes two forms: passive and active. The first places the learner in a passive role. The second places the learner in an active role. The first is characterized by environmental and/or instructional modifications made by the teacher for the student. The second is characterized by the teacher helping the student to become aware of the disabilities and providing instruction in strategies which will enable the student to make appropriate adaptions to learning demands across situations and settings.

Public school educators teach the approved curriculum goals and objectives, selecting instructional objectives and educational strategies which are appropriate for the students in their classes. Within the scope

of the regular classroom, and thus within developmental teaching, a great amount of variation takes place to accommodate the differing rates and styles of normally developing groups of student learners. General education, by its historical character, has focused on class or group oriented instructional designs, whereas special education, by its historical character, has focused on the instruction of individual learners. Individually designed and focused teaching in an environment in which teaching strategies can be varied is an essential component of any special education instructional program for learning disabled students.

The ultimate goal of the three teaching focuses is to enable the student to master the approved curriculum goals and objectives of the school system. Within developmental teaching, the content, instructional objectives, and strategies/methods are focused directly on this mastery. Within remedial and adaptive teaching the curriculum goals and objectives are the same as for developmental teaching, but supplementary instructional objectives and/or teaching methods are added to address the unique needs of the learner.

It is the responsibility of the interdisciplinary instructional personnel in developing the IEP to analyze the student assessment information to determine the appropriate teaching focus(es). It is not likely that any single focus is appropriate for any one child, but when interdisciplinary instructional personnel share common curriculum goals and objectives, the identification of the focus(es) of instruction, as well as differentiation of responsibilities can guide the selection of instructional objectives, materials, and activities.

Figure 8.1
A Summary of Education Approaches
Used to Guide Instruction
of
Learning Disabled Students

Teaching Type	Teaching Approach (focus)	Basic Goal for Students	Teaching Method & Curriculum
1.0 Developmental	1.1 Regular	To succeed in the regular scope & sequence of approved curriculum	Regular teaching methods with approved curriculum and stand ard rate & scope & sequence
	1.2 Modified/ Basic	To succeed in essential pieces of curriculum needed for societal & career functioning	Teaching or reteaching methods with an essential or function- al curriculum and adjusted rate and scope and sequence
2.0 Remedial	2.1 Physiologic Dysfunction	To cure a dysfunction within a disabled student	Special teaching methods with a specially developed curric- ulum
	2.2 Skill Deficit 2.2.1 Direct	To catch the student up to the regular curriculum scope & sequence	Special teaching methods with regular curriculum
	2.2.2 Indirect	To strengthen a weak abil- ity with the assumption that this will improve a skill deficit	Special teaching with special curriculum
3.0 Adaptive	3.1 Passive	To modify the environment , learning inputs & outputs to circumvent a student's weak abilities, utilizing strengths	Special teaching with regular curriculum
	3.2 Active	To teach the student to use learning strategies to use strengths & curriculum	Special teaching methods with regular curriculum and some special learning objectives

Appendix A

DEFINITIONS OF TERMS ON THE STUDENT PROFILE

Listening Comprehension

Listening comprehension is the ability to receive and understand verbal stimulus. Listening comprehension includes utilization of the phonological, morphological, syntactical, semantic, and pragmatic use of one's language system.

(1) Phonology is related to the production of the phonemes (speech sounds) of a language in accordance with the rules which dictate their sounds produced alone or in combination with other sounds.

(2) Morphology is related to the production of the morphemes (smallest meaningful unit of language) of a language which are produced in accordance with the language rules which dictate them.

(3) Syntax is related to the rules which dictate the sequence, combination and function of words in an acceptable spoken sentence.

(4) Semantics is related to the understanding and use of spoken language and its specific meaning.

(5) Pragmatics refers to the use of both verbal and nonverbal language in social context.

Students who are deficient in listening comprehension have difficulties comprehending the spoken word or spoken language. This should not be confused with problems related to distractibility or auditory memory.

Information about the student's listening comprehension may be drawn from the four components of the LD Project screening and assessment procedures.

Oral Expression

Oral expression is the ability to produce speech sounds. Oral expression includes all the components of language: phonology, morphology,

syntax, semantics, and pragmatics, as they are used by an individual to produce speech sounds in such a way as to communicate.

For normal oral expression to occur, all the language components must interact in an ongoing, simultaneous manner.

Information regarding the student's oral expression may be gathered from the four components of the LD Project screening and from assessment procedures.

Basic Reading Skills

Basic reading skills include the following:

(1) Sight word recognition
(2) Phonic analysis
(3) Structural Analysis
(4) Reading rate
(5) Use of contextual clues

While sight word recognition and phonic abilities are the core of basic reading skills, it is important to consider these skills in the context of a written passage. In this way we can observe how a student is able to apply the basic reading skills in the total reading act.

Information concerning the student's basic reading skills may be collected from the four components of the LD Project screening and assessment procedures when appropriate.

Reading Comprehension

Reading comprehension is the process whereby the reader recognizes and understands the ideas and meanings contained in written material. This process may be considered in either oral or silent reading. Many skills are incorporated into reading comprehension. These skills have been broken

down and organized in a variety of ways by experts in the field. The following descriptions are an incorporation of the most widely used descriptions.

(1) Literal or Factual Comprehension is the understanding of information that is presented directly and clearly in the material read. Literal comprehension includes answering questions based directly on the written content, sequencing events or ideas presented, and summarizing information provided. Inferential Comprehension requires interpretation and inference of what has been read. The student needs to derive meaning from the material presented. Many experts break inferential comprehension into two components, interpretive and critical.

(2) Interpretive Comprehension includes detecting the main idea, drawing conclusions, and determining cause and effect relationships.

(3) Critical Comprehension is an extension of interpretive comprehension. It is the highest level of comprehension where the reader compares the material with his/her conceptual background. Critical comprehension includes judging accuracy, distinguishing between fact and opinion, as well as an extensive use of analysis skills.

Information regarding reading comprehension may be gleaned from the four components of the LD Project screening and assessment procedures.

Written Expression

Written expression is defined as the ability to use a written symbol system to clearly communicate ideas, thoughts, and feelings in a meaningful way. Written expression is one of the highest forms of communication. In order to become competent in written expression one must develop and integrate skills and abilities in the areas of listening, speaking, and reading.

Written expression includes the mechanical skills of handwriting, spelling, capitalization, and punctuation. It also includes linguistic

skills of morphology, syntax, and semantics to generate meaningful sentences to express one's thoughts, feelings, and opinions in an organized way.

Information regarding written expression may be collected from the four components of the LD Project screening and assessment procedures.

Math Calculation

Math calculation includes:

1. Recognition and understanding of whole numbers, fractions, decimals, and percentages;
2. Identification and understanding of the following symbols: +, -, x, :, %, and ;
3. The ability to count;
4. Knowledge and understanding of place value;
5. Computational processes of addition, subtraction, multiplication, and division on whole numbers, fractions, decimals, and percentages. Calculation also includes higher level processes on abstract numerical theories and concepts.

Math calculation skills are generally shown through pencil and paper tasks where the student determines the correct answer to computational tasks.

Information concerning math calculation may be gathered from the four components of the LD Project screening and assessment procedures.

Math Reasoning

Mathematical reasoning includes the ability to:

1. Determine the appropriate operation(s) needed to solve a problem.
2. Consider and select the most feasible strategy for problem solving.
3. Apply operational solutions in an appropriate manner.
4. Realize when a particular strategy is not successfully providing a solution.

5. Isolate information needed to solve a task, often using inference or application to the real world.

6. Recognize and apply common measurement units.

7. Understand graphs and tables.

8. Solve problems involving money and time.

Information regarding math reasoning may be collected from the four components of the L.D. Project screening and assessment procedures.

Visual Discrimination

Visual discrimination refers to the differentiation between visual patterns and the ability to see likenesses and difference in them. It includes discrimination of letter forms, word patterns, as well as, discrimination of gross forms (picture, geometric patterns, etc.). Students who have difficulty with visual discrimination may experience problems in distinguishing the differences between pictures, objects, shapes, printed letters and/or words.

Information concerning this skill may be obtained from the student referral under the reading section, the educational history, the classroom observation, and from performance on assessment instruments.

Auditory Discrimination

Auditory discrimination refers to the differentiation of sounds (speech or nonspeech). It may involve differentiating tone, rhythm, volume, or direction of sound. Students who have difficulty with auditory discrimnination may experience problems in distinguishing the differences between sounds or spoken words. This may result in problems in learning to comprehend and use oral language, to read, spell, or write.

Information concerning this skill may be found on the student referral under the reading section, the educational history, the classroom

observation, and from performance on assessment instruments.

Memory

Memory is the ability to retain and retrieve information over time. The process of memory is a complicated act which is affected by the student's attention, organization, motivation, etc. When assessing memory, one should consider recognition, rote memory, recall, and long and short term retention in the sensory process in question, i.e., auditory or visual. (1) Rote memory is the ability to recall information that is sequential and ordered. Recall of the days of the week, the alphabet and number order are examples of rote memory. (2) Recognition is the ability to recognize retained information when given several alternatives. Recognition differs from recall in that a student demonstrates the ability to choose the correct response rather than automatically retrieve the information. (3) Recall is the ability to retrieve and demonstrate memory of information with few or no clues. (4) Short term memory refers to the recall of information immediately or within a short time period. Short term memory does not indicate storage for long term recall. (5) Long term memory refers to the storage and recall of previously learned information over time.

Information concerning a student's memory, auditory or visual, can be obtained from the four components of the LD Project screening and assessment procedures.

Visual Motor Coordination

Visual motor coordination is the ability to synchronize or coordinate the eyes with the movements of the hand and the thought processes of the brain. Efficiency of these three processes operating in concert with each other is required for handwriting and other motor tasks such as typing, threading, cutting, coloring, folding, drawing, and sewing.

Nadine Lambert et al.[1] (1981) define visual motor as the ability to associate, organize, and sequence units of visual input with eye, hand, and finger movements.

1

Special Education Assessment Matrix, Nadine Lambert et al., Monterey, California: CTB/ McGraw-Hill, Inc., 1981

Attention

Attention may be defined as one's ability to select the relevant stimuli and inhibit or resist responding to other competing stimuli. Attention to task is vastly important in all learning situations; therefore, it is of significant importance to school age children. Problems in attention in the classroom may be indicated by some of the following behaviors:

(1) Inability to stay on task;

(2) Inability to begin, organize or complete work;

(3) Inability to listen;

(4) Inability to concentrate;

(5) Careless errors;

(6) Easily distracted.

Information concerning attention may be obtained from the four components of the LD Project screening and assessment procedures. The need for assessment of problems in attention is determined by the corroboration of concerns from these four sources. Sound clinical judgement may be the most helpful means of measuring the types, severity, and effects of attention problems.

Organization

Organization is the ability to order and systematically arrange elements into a plan. When observing and assessing a student's organization, one should consider the student's ability to organize both internally and externally.

(1) Internal organization refers to the ability of a student to order and systematically structure from within. Students with difficulty in internal organization may demonstrate problems in their use of time, position and awareness of space, sequencing events, task preparation, task completion, and anticipation of consequences.

(2) External organization refers to the ability of a student to give order and structure to the environment. Students with problems in external organization may demonstrate problems in task preparation and completion, returning homework, keeping belongings, and arranging one's physical environment.

(3) Information regarding organization may be obtained from the four components of the LD Project screening procedures and observation during assessment.

Activity Level

Activity level refers to the student's level or amount of response to his/her environment. The environment includes the teacher, classmates, and self, as well as sights and sounds such as sharpening pencils, dropping books, rustling papers, etc.

A high level of response to one's environment is sometimes expressed through excessive activity or mobility. Behaviors that may be observed in children with high activity level include:

constant movement
inability to sit still
fingering, touching, and mouthing objects
uninhibited and/or excessive speech
restlessness
distractibility
short attention span
poor concentration

excitability
lack of frustration tolerance
activity which is not excessive, but is totally non-directed and inappropriate.

A low level of response to the environment may be indicated by unusually limited activity or mobility. Behaviors that may be observed in children with low activity level include:

listlessness
inattentiveness
daydreaming
lethargy

Information concerning the student's activity level may be collected from the four components of the LD project screening and observation during assessment.

Social Perception

Social perception is defined as one's ability to recognize and respond to significant verbal intonations and the nonverbal aspects of communication that indicate the attitudes, feelings, and intentions of the communicators. Difficulties in this area of perception may cause inappropriate classroom and social behavior due to the student's inability to correctly interpret common expressions, affect, and attitudes. Students with poor social perception skills may demonstrate problems in interpreting boundaries, bumping into objects and people, standing too close to people, talking at inappropriate times, and generally misreading peer and adult cues. This difficulty may result in rejection from others since the student appears "stupid" or "tactless."

Information regarding the student's social perception may be obtained from the four components of the LD Project screening and assessment.

Verification of these problems may be determined through the psychological assessment.

Medical/Physical Factors

Medical and physical factors can result in a student's underachievement. Many metabolic disorders can produce lethargy, distractability, and other symptoms that are also found among learning disabled students. Children with allergies, asthma, and other respiratory disorders can have their schooling disrupted and lose the continuity of instruction which may result in "underachievement". Medications for some disorders can also affect attention or slow down the student's time response. Ear infections producing temporary hearing loss can also cause underachievement. Many orthopedic problems may impede motility and reduce a student's range of experiences. Other orthopedic problems may prevent writing from being used as a learning tool with the potential of causing achievement problems.

Such medical/physical factors identified as being significantly causal of the student's underachievement, are reasons for excluding the child as having a specific learning disability. Some of these students may be seen as possessing the handicap, "other health impaired," and may need temporary or long term support systems through special education.

When the medical/physical problems or concerns are primarily central nervous system dysfunctions that effect cognitive psychological factors and academic achievement, they may be suggestive of a learning disability. In most situations these psychoneurological dysfunctions are presumed rather than medically identified. The presumptions are sometimes based

upon information gathered through the parent questionnaire, school medical records, pediatric or other special evaluation. When a neurological dysfunction is presumed, it is not necessary to secure a neurological evaluation for confirmation.

When other medical/physical factors are known to be causal, it may be necessary to consult a medical advisor, school nurse, or family physician to determine if the condition is a handicapping health impairment.

Speech

Speech, the production of audible utterances is defective when it deviates so far from the speech of other people that it calls attention to itself or interferes with communication. Speech difficulties fall into several different categories:

(1) Articulation, in which speech sounds are omitted, replaced by a substitute sound, or distorted;

(2) Voice problems, in which pitch, loudness, or quality of voice is affected;

(3) Stuttering.

Information concerning a student's speech performance may be gathered from the four components of the LD project screening and from performance on assessment procedures.

Language Dominance Difference

Language dominance refers to the primary language that the student understands, speaks, and uses. English may be understood and spoken at school, but another language is the primary mode of communication at home and play.

Language difference refers to a student who does not speak English.

Information concerning a student's language dominance or difference may be found on the parent questionnaire and educational history.

Vision (Acuity)

Visual acuity refers to the ability to see forms or letters clearly from a certain distance. The Snellen Chart, a visual screening test used in many schools, tests visual acuity at 20 feet from the chart, that is, far-point visual acuity. A score of 20/20 indicates that the subject sees at 20 feet what the normal eye sees at 20 feet. A score of 20/40 indicates that the subject sees at 20 feet what the normal eye sees at 40 feet.

Visual acuity refers to the ability of the eye to receive external visual stimuli. Visual perception, on the other hand, refers to the person's ability to interpret this stimuli.

Vision screening results should be recorded on the educational history form and may be obtained from the student's health record. Impairments in visual acuity should be ruled out as the primary cause of the student's learning problem.

Hearing (Acuity)

Hearing acuity refers to the ability of the ear to hear auditory stimuli accurately. It does not include the person's ability to interpret those sounds.

Hearing is most frequently measured with an electronic device called a pure-tone audiometer. Pure tones are produced near the outer ear, and the

subject indicates whether or not a sound is heard. This auditory screening instrument is used to detect children who should be referred for a more thorough and intensive examination. Two attributes of a students's ability to hear sound are intensity and frequency. Intensity refers to the relative loudness of the sound and is measured in decibels (dB). The louder the sound, the higher the decibel measure. Ordinary conversation measures at 56 to 60 decibels. Silverman (1960) estimates a hearing threshold of 30 decibels as the minimum level at which children begin to encounter problems in school.

Frequency refers to the pitch or vibrations of a given sound wave and is measured in cycles per second (cps). A person may have a hearing loss at one frequency but be able to hear well at another. In speech, consonant sounds such as s, sh, and z are high-frequency sounds; vowels, such as o and u, are low-frequency sounds.

Hearing level is the intensity level in decibels at which a person begins to detect sounds in various frequency levels. When screening children for hearing loss, the audiometer may be set at an intensity of 15 to 20 decibels. In a comprehensive sweep check test, the child is tested at frequencies of 250, 500, 1,000, 2,000, and 8,000 cycles per second. A student who exhibits hearing levels of 20 decibels or greater at any two frequencies in either ear should be referred for further examination.

Hearing screening results should be recorded on the educational history form and may be obtained from the student's health record. Impairments in hearing acuity should be ruled out as the primary cause of the learning problem. The law states that the term Specific Learning Disability does not include children who have learning problems which are primarily the result of a hearing handicap.

Environmental Disadvantage

Environmental, cultural, and economic differences are not in themselves disadvantages. When their influence unreasonably restricts the educational progress of a student, they become an educational disadvantage. Jane Mercer et al. (1973, 1977), as well as researchers in Headstart (Klaus & Gray, 1968) have proferred that economic, cultural, or environmental influences cause a disadvantage when they are sufficiently intense to impede a student's attainment of reasonable expectations and aspirations.

Kagan and others have noted that these factors frequently influence a student's constitutional make-up in the realms of thinking, acting, and speaking. The distinction between a student who is not making reasonable educational progress because of a learning disability from the student who is not making reasonable educational progress because of a disadvantage is a diagnostically difficult and socially sensitive issue. Compounding this is the fact that there are learning disabled students with disadvantage.

The nature of a student's severe discrepancy between actual and expected achievement is not only important for diagnosis, but in order to plan appropriate educational interventions.

The ARD evaluation team must identify areas of possible disadvantage based upon the screening information and, as appropriate, obtain further information in order to carefully consider their influence. Only in those circumstances where the ARD evaluation team can attribute the primary cause of a severe discrepancy to a disadvantage should the ARD evaluation team exclude the student from a diagnosis of learning disability. In these

cases the ARD evaluation team should actively consider whether another ARD team with the same information would reach the same conclusion.

Some indicators of environmental differences might include:

- participation in a subsidized lunch program,
- family income at or below national poverty level,
- parents or guardians unemployed,
- parents are recipients of public assistance,
- student or parent is under the guardianship of another person or agency,
- unusually limited background of experiences.

Social Emotional

A student with achievement problems that are primarily caused by emotional problems is not learning disabled. Social-emotional problems are manifested through inappropriate behaviors including inability to relate to peers and adults, attention problems related to preoccupation, thought disorders, depressed mood, excessive aggression, tendencies to develop physical symptoms, or severe phobias associated with social/school situations.

The four components of the LD Project screening should provide a guide in determining if this area of concern needs to be assessed. The school psychologist will need to review this information to determine what assessment would be necessary.

The student who is truly emotionally disturbed may be easily differentiated from the LD student. However, differential diagnosis for many is difficult. The gray area cases are frequently those with a

discrepancy between ability and achievement and an unusually negative or aggressive attitude toward others.

Cognitive

Cognitive ability is defined as a person's overall ability to adapt and function in the learning environment. Ability level includes not only the student's cognitive abilities and adaptive behaviors displayed in school, home, and social relationships, but also his/her general intellectual ability as measured by individually-administered intelligence (IQ) tests.

Appendix B

SUMMARIES OF ACHIEVEMENT TESTS

LISTENING COMPREHENSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Assessment of Children's Language Comprehension. Palo Alto, CA: Consulting Psychologists Press, Inc., 1972.	AGES 3-7	Receptive vocabulary, of 50 common words combined into 2, 3, and 4 element phrases. Child points to appropriate picture in responce to word or phrase spoken by examiner.	Criterion	Percentiles	Normative data, reliability, & validity data incomplete
Clinical Evaluation of Language Functions. (Diagnostic battery) Columbus, Ohio: Charles E. Merrill Publishing Company, 1980, 82.	K-12	Six language processing subtests ie., word & sentence structure, concepts, oral directions, spoken paragraphs	Norm	Age/grade levels	Elementary & advanced level screening tests also available; Norms available as of 3/82
Diagnostic Reading Scale (Spache). Monterey, CA: CTB/McGraw Hill, 1972.	1-12	Auditory comprehension (passages available as part of reading test to be read aloud by examiner	Norm	Grade level	Standardization sample not described in manual
Durrell Analysis of Reading Difficulty. New York: Harcourt, Brace, Jovanovich, 1955.	1-6	Listening comprehension subtest (examiner reads paragraph & asks specific comprehension questions)	Norm	Grade level	Tests auditory memory for details
Durrell Listening-Reading Series. New York: Harcourt, Brace, Jovanovich, 1970.	1-9	Listening comprehension (vocabulary sentences, paragraphs)	Norm	Grade/age level, percentile, stanine	Group test, extensive reliability & validity data, large standardization sample

LISTENING COMPREHENSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Peabody Picture Vocabulary Test-Revised. Circle Pines, MN: American Guidance Service, 1981.	AGES 2 ½-adult	Single word receptive vocabulary only	Norm	Age level, standard scores, percentiles, stanines	Adequate standardization
Stanford Achievement Test. New York, NY: Harcourt, Brace, Jovanovich, Inc., 1973. (Listening Comprehension subtest)	1.5-6.9	Dictated passages	Norm	Grade/age levels, percentiles, standard scores	Group test, standardization excellent
Test for Auditory Comprehension of Language. Hingham, MA: Teaching Resources, 1973.	AGES 3-7	Auditory comprehension of vocabulary & structure (syntax & grammar)	Norm	Age level, percentiles	High test-retest reliability

ORAL EXPRESSION

Test and Publisher	Age Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Carrow Elicited Language Inventory. Learning Concepts, 1974.	3-0 to 7-11	Oral grammar	Norm	Percentiles, stanines	Limited standardization sample, not useful with children who have severe articulation problems or who suffer severe echolalia
Clinical Evaluation of Language Functions. (Diagnostic battery) Columbus, Ohio: Charles E. Merrill Publishing Company, 1980, 82.	K-12 (grades)	Five language production subtests ie., words, sentences, associations	Norm	Age/Grade levels	Elementary & advanced level screening tests also available; Norms available as of 3/82.
Illinois Test of Psycholinguistic Abilities. Urbana, IL: University of Illinois Press, 1968.	2-4 to 10-3	Verbal expression, grammatic closure, auditory association	Norm	Psycholinguistic age, mean scaled score, median scaled score	Inadequate norms, poor reliability, questionable validity
Meeting Street School Screening Test East Providence, RI: The Easter Seal Society for Crippled Children & Adults of Rhode Island, Inc.	5-0 to 7-5	Language subtest surveys listening, memory, sequencing, & language formulation	Norm	Scaled scores	Standardization sample not described in manual
Preschool Language Scale, Revised. Columbus, OH: Charles E. Merrill Publishing Co., 1979.	1-5 to 7	Auditory comprehension, verbal ability & language	Norm	Auditory comprehension age & quotient, & language age & quotient	No reliability, validity date reported

ORAL EXPRESSION

Test and Publisher	Age Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Structured Photographic Language Test. Sandwich, IL: Janelle Publications, 1974.	4-0 to 8-11	Expressive grammatical structures	Norm	Grammatical performance is compared to age guidelines	Adequate norms
Test of Adolescent Language. Austin, TX: Pro-Ed, 1980.	11-0 to 18-5	Speaking/vocabulary, speaking/grammar	Norm	Scaled scores quotients	Standardization adequate
Test of Language Development-Primary Edition. Austin, TX: Pro-Ed, 1971.	4-0 to 8-11	Oral vocabulary, grammatic understanding, sentence imitation, grammatic completion	Norm	Language age, scaled score, language quotient	Standardization adequate
Test of Language Development-Intermediate. Austin, TX: Pro-Ed, 1982.	8-6 to 12-11	Sentence combining, word ordering	Norm	Percentiles, scaled score, language quotient	Reliability & validity adequate
Woodcock Language Proficiency Battery. Hingham, MA: Teaching Resources, 1980.	3-0 to 80+	Picture vocabulary, antonyms-synonyms, analogies	Norm	Oral language cluster score, standard score, percentile rank	Composed of selected subtests from the Woodcock-Johnson Psycho-Educational Battery; Standardization adequate

BASIC READING SKILLS

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Botel Reading Inventory. Chicago, IL: Follett Publishing Co., 1970.	1-12	Word recognition phonics	Norm	Grade level	Normative data not described in manual
Brigance Diagnostic Inventory of Basic Skills. North Billerica, MA: Curriculum Associates, 1976, 77.	K-6	Oral reading, word recognition, word analysis, spelling	Criterion	Grade level	Informal measure, useful in planning instruction
Brigance Diagnostic Inventory of Early Development. North Billerica, MA: Curriculum Associates, 1978.	Preschool to 2 (Birth to 7 years)	Visual and auditory discrimination, letter names and sounds, word recognition, oral reading	Criterion	Age level	Format of record book may be confusing, informal measure, useful in planning instruction
Brigance Diagnostic Inventory of Essential Skills. North Billerica, MA: Curriculum Associates, 1981.	4-11	Word recognition, word analysis, oral reading, functional skills	Criterion	Grade level	Informal measure, useful in planning instruction
California Phonics Survey. Palo Alto, CA: Consulting Psychologists Press, 1963.	7-12	Phonics	Norm	Scaled scores	Normative sample inadequately described in manual
Classroom Reading Inventory (Silveroli) Dubuque, IA: Wm. C. Brown Company Publishers, 1976.	2-8	Word recognition	Criterion	Independent instructional & frustration levels	Informal measure
Criterion Test of Basic Skills. Novato, CA: Academic Therapy Publications, 1976.	1-6	Letter recognition, phonics, sight vocabulary	Criterion	Mastery, instructional frustration levels	Useful in planning instruction

BASIC READING SKILLS

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Diagnostic Reading Scales (Spache). Monterey, CA: CTB/McGraw Hill, 1972.	1-8	Word recognition, phonics	Norm	Grade level	Standardization sample not described in manual
Durrell Analysis of Reading Difficulty. New York: Harcourt, Brace, Jovanovich, Inc., 1955.	1-6	Word analysis skills word recognition	Norm	Grade level	Normative population, reliability, and validity studies are not reported
Gates-McKillop Reading Diagnostic Tests. New York: Teachers College Press, 1962.	1-6	Word analysis, word recognition, sound blending	Norm	Grade level	No description of norming sample and no reliability & validity studies reported
Macmillan Reading Readiness Test. Riverside, NJ: Macmillan Publishing Company, 1970.	K-1	Visual discrimination, auditory discrimination, word recognition	Norm	Percentiles	Normative data limited, screening test
Metropolitan Readiness Test. New York: Harcourt, Brace, Jovanovich, Inc., 1976.	K-1	Level I-auditory memory, rhyming, letter recognition, visual matching Level II-beginning consonants, sound/letter correspondence, visual matching	Norm	Percentiles, stanines performance ratings, standard scores	Multiple choice format, group administered, screening, adequately normed
Mann-Suiter Developmental Word-Recognition Inventory. Bolton: Allyn & Bacon, Inc., 1979.	Reading levels PrePrimer-eighth	Word recognition - timed and untimed	Criterion	Frustration, instructional and independent levels	Informal measure

BASIC READING SKILLS

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Peabody Individual Achievement Test. Circle Pines, MN: American Guidance Service, Inc., 1973.	K-12	Word recognition	Norm	Grade level, age level, percentile ranks at age and grade, standard scores	Designed as a screening instrument, standardization excellent
Stanford Achievement Test. New York, NY: Harcourt, Brace, Jovanovich, Inc., 1973.	1.5-6.9	Word study skills subtest (phonics)	Norm	Grade/age levels, percentiles, standard scores	Group test, standardization excellent, 5 levels
Stanford Diagnostic Reading Test. New York: Psychological Corp., 1976.	1.6-13	Word recognition, phonics, structural analysis	Norm	Grade level, percentile ranks, stanines, scaled scores, standard scores	Multiple choice test, standardization excellent
Wide Range Achievement Test. Wilmington, DE: Jastak Associates, Inc., 1978.	K-12	Word recognition, letter identification	Norm	Grade level, percentiles, standard scores	Limited behavior sampling, inadequate standardization, no reliability & validity data

BASIC READING SKILLS

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Woodcock-Johnson Psycho-Educational Battery. Part 2 Achievement. Hingham, MA: Teaching Resources, 1977.	K-12	Letter/word identification, word attack	Norm	Grade level, age level, percentile rank, functional level, standard score	Adequate standardization
Woodcock Reading Mastery Tests. Circle Pines, MN: American Guidance Service, Inc., 1973.	K-12	Letter identification word identification, word attack	Norm	Grade/age levels, percentiles, standard scores (mean 50, SD 10)	Adequate standardization

READING COMPREHENSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Brigance Diagnostic Inventory of Basic Skills. North Billerica, MA: Curriculum Associates, 1976, 77.	K-6	Vocabulary, oral paragraph reading, comprehension	Criterion	Grade level	Useful in planning instruction
Brigance Diagnostic Inventory of Essential Skills. North Billerica, MA: Curriculum Associates, 1981.	4-11	Oral and silent comprehension	Criterion	Grade level	Useful in planning instruction
California Achievement Test. Monterey, CA: CTB/McGraw Hill, 1977, 78. (Vocabulary & Comprehension subtest)	1.5-12	Word meaning, sentence & passage comprehension	Norm	Grade level, percentile rank, stanine, scaled score, NCE	Reliability is adequate; Validity data not described in manual; Useful at screening level; Multiple choice format; Group test.
Classroom Reading Inventory. (Silveroli) Dubuque, Iowa: Wm. C. Brown Company, 1976.	2-8	Oral paragraph reading & comprehension	Criterion	Independent instructional & frustration levels	Informal measure
Diagnostic Reading Scales (Spache). Monterey, CA: CTB/McGraw Hill, 1972.	1-8	Oral & silent reading comprehension	Norm	Grade level	Standardization sample not described in manual
Durrell Analysis of Reading Difficulty. New York: Harcourt, Brace, Jovanovich, Inc., 1955.	1-6	Oral & silent comprehension	Norm	Grade level	Normative population, reliability, & validity data not reported in manual
Durrell Listening-Reading Difficulty. New York: Harcourt, Brace, Jovanovich, Inc., 1970.	1-9	Vocabulary, sentence paragraph comprehension	Norm	Grade/age level, percentiles, stanines	Group test, extensive reliability & validity data, large standardization sample

READING COMPREHENSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Ekwall Reading Inventory. Boston: Allyn and Bacon, Inc, 1970.	1-8	Oral paragraph reading & comprehension	Criterion	Independent, instructional & frustration levels	Informal measure
Gates-MacGinitie Reading Tests. Los Angeles: Western Psychological Services, 1972.	1-12	Vocabulary & comprehension	Norm	Grade level, percentiles, stanines, standard scores mean 50, SD 10	Group screening test, multiple choice, well normed
Gilmore Oral Reading Test. New York: Harcourt, Brace, Jovanovich, Inc., 1968.	1-8	Accuracy, comprehension, rate of oral reading	Norm	Grade level, percentiles, stanines	standardization sample inadequately described in manual
Gray Oral Reading Test. Indianopolis: Bobbs-Merrill, 1963.	1-12	Oral reading & reading speed	Norm	Grade level	Norms reliability & validity are limited. (Reading rate significantly affects grade score)
Iowa Test of Basic Skills. Boston: Houghton Mifflin, 1978. (Vocabulary and Reading subtests)	1-9	Word meaning & passage comprehension	Norm	Grade/age levels, percentile rank, stanines, standard scores	Standardization is adequate; useful at screening; group test; multiple choice format.
Mann-Suiter Developmental Paragraph Reading Inventory. Boston: Allyn & Bacon, Inc., 1979.	Reading levels Preprimer 3 - eighth	Silent & oral comhension	Criterion	frustration, independent, & instructional levels	Informal measure

READING COMPREHENSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Metropolitan Achievement Test. New York, NY: Harcourt, Brace, Jovanovich, 1978. (Reading subtest)	K-9	Passage comprehension at lower levels, students select sentences to describe pictures	Norm	Percentile rank, stanines, grade level, standard scores	Normative sample is adequate; reliability & validity are adequate; multiple choice screening test.
Peabody Individual Achievement Test. Circle Pines, MN: American Guidance Service, 1970.	K-12	Child reads passage & chooses a picture (given 4) that goes with it	Norm	Grade/age levels, percentile rank at age & grade standard score	Standardization excellent; designed as a screening instrument
Stanford Achievement Test. New York, NY: Harcourt, Brace, Jovanovich, Inc., 1973.	1.5-9.5	Vocabulary & passage comprehension at first 2 levels; passage comprehension at upper levels	Norm	Grade/age levels, percentiles, standard scores	Group test, standardization excellent, 6 levels, upward extension available for grades 9-12
Stanford Diagnostic Reading Test. New York: Harcourt, Brace, Jovanovich, 1978.	1-12	Reading comprehension & rate of comprehension	Norm	Percentiles, stanines, grade level, scaled scores	Standardization is excellent
Woodcock-Johnson Psycho-Educational Battery. (Tests of Achievement) Hingham, MA: Teaching Resources, 1977.	1-12	Passage comprehension using cloze procedure	Norm	Age/grade levels, percentiles, functioning levels, standard scores	Adequate standardization
Woodcock Reading Mastery Tests. Circle Pines, MN: American Guidance Service, 1973.	K-12	Word Meaning, passage comprehension using cloze procedure	Norm	Age/grade level, percentiles, standard scores (mean 50, SD 10)	Adequate standardization

WRITTEN EXPRESSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Brigance Diagnostic Inventories, North Billerica, MA: Curriculum Associates, 1980.	Preschool -12	Handwriting, mechanical skills of capitalization, punctuation, spelling & some functional writing skills	Criterion	Grade Levels	Useful in planning instruction
California Achievement Tests. Monterey, CA: CTB/McGraw Hill, 1977, 78. (Language & Spelling Subtests)	1.5-12	Language arts skills of capitalization, punctuation, & grammar, usage & structure; in the spelling subtest the student is required to choose from 4 responses the correct spelling of a word to fill in the blank in a sentence.	Norm	Percentile, stanine, grade level, NCE	Reliability is adequate, validity data not described in manual, useful at screening multiple choice format, group test.
Iowa Test of Basic Skills. Boston, MA: Houghton Mifflin, 1978. (Language Subtest)	1-9	Language is assessed in 4 areas: spelling, identification, capitalization, punctuation & usage.	Norm	Age level, percentile rank, stanine, standard score, grade level.	Standardization is adequate, useful at screening, group test, multiple choice format.
Larsen-Hammill Test of Written Spelling. Austin, TX: Pro-Ed, 1976.	1-8	Written spelling of predictable & unpredictable words.	Norm	Spelling ages, grade levels, spelling quotient similar to standard score.	Standardization adequate

WRITTEN EXPRESSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Metropolitan Achievement Test. New York: Harcourt, Brace, Jovanovich, 1978. (Language & Spelling Subtest)	K-9	Language subtest assesses knowledge of rules of punctuation, capitalization & usage. Spelling assessed through written dictation.	Norm	Percentile rank, stanine, grade level, standard score.	Standardization, reliability & validity are adequate, useful at screening, multiple choice format, group test.
Morrison-McCall Spelling Test		Written dictated spelling	Norm	Grade levels	
Peabody Individual Achievement Test. Circle Pines, MN: American Guidance Service, 1970. (Spelling Subtest)	K-12	Spelling at recognition level	Norm	Age/Grade levels, percentile rank at age & grade, standard scores	Excellent standardization. The area of spelling is tested by a multiple choice format with no writing involved. Designed as a screening test.
Picture Story Language Test. New York: Grune & Stratton, 1965.	Ending 1st-12	Written sample is evaluated in 5 areas: total sentences, words per sentence, syntax & an abstract-concrete score.	Norm	Mean age scores, percentiles, stanines	Validity information is excellent.
Slingerland Screening Tests for Identifying Children With Specific Language Disability. Cambridge, MA: Educators Publishing Service, 1962-74. (Subtests 1,2,5,6 & 7.)	1-6	Subtest 1 & 2: Copying from near & far point. Subtest 5: Writing from memory with a visual stimulus. Subtest 6: Writing from memory with an auditory stimulus. Subtest 7: Writing sounds from an auditory stimulus	Criterion referenced	Format for error analysis.	Informal measure. Group or individually administered. Four levels available.

WRITTEN EXPRESSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Test of Adolescent Language. Austin, TX: Pro-Ed, 1980. (Subtests of Writing/Vocabulary & Writing/ Grammar)	6-12	Writing/Vocabulary subtest requires student to write vocabulary words in a meaningful sentence; Writing/Grammar subtest requires student to combine sentences into a single sentence which incorporates all the important elements of the stimulus sentences.	Norm	Scaled scores, quotients	Standardization, reliability, & validity are adequate.
Test of Written Language. Austin, TX: Pro-Ed, 1978.	3-8	Written sample is evaluated for vocabulary, thematic maturity, handwriting & thought units; other areas evaluated are word usage, style, (capitalization, punctuation) & spelling.	Norm	Scaled scores for each subtest; a written language quotient is obtained; grade level.	Reliability is adequate; validity data is mixed. Authors caution use of grade equivalent scores on students older than 14 1/2.
Wide Range Achievement Test. Wilmington, DE: Guidance Associates of Delaware, 1976.	K-12	Written dictated spelling	Norm	Grade level, percentile at age, standard score.	Inadequate standardization; absence of reliability & validity data.

WRITTEN EXPRESSION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Woodcock-Johnson Psycho-Educational Battery. (Test of Achievement) Hingham, MA: Teaching Resources, 1977.	Preschool to Adult	Written language achievement; two subtests are administered: dictation & proofing; the dictation subtest requires student to only spell isolated single words. Proofing section requires student to locate either punctuation, usage, or spelling errors in a printed sample.	Norm	Grade level, percentile rank by age & grade & a relative functioning level.	Standardization, reliability, & validity are adequate.

MATHEMATICS CALCULATION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Basic Skills in Arithmetic. Chicago, IL: Science Research Associates, 1973.	6-12	Computation	Norm	Percentiles	Inadequate norming sample, useful in planning instruction
Brigance Diagnostic Inventory of Basic Skills. North Billerica, MA: Curriculum Associates, 1976, 77.	K-6	Operations including whole numbers, fractions, decimals, & fractions	Criterion	Grade level	Useful in planning instruction
Brigance Diagnostic Inventory of Early Development. North Billerica,	Preschool-2	Basic comprehension given pictorial clues	Criterion	Age level	Informal developmental measure
Brigance Diagnostic Inventory of Essential Skills. North Billerica, MA: Curriculum Associates, 1978.	4-11	Number facts, computation of whole numbers, fractions decimals, & percents, metrics	Criterion	Grade level	Useful in planning instruction
California Achievement Tests. Monterey, CA: CTB/McGraw Hill, 1977, 78. (Computation subtest)	1.5-12	Computational problems of increasing difficulty, multiple choice items	Norm	Percentile rank, stanine, grade level, scaled score, anticipated achievement scores	Reliability is adequate; Validity data not described in manual; Useful at screening level; multiple choice format; test
Criterion Test of Basic Skills. Novato, CA: Academic Therapy	1-6	Computation	Criterion	Mastery, instructional & frustration levels	Useful in planning instruction

MATHEMATICS CALCULATION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Iowa Test of Basic Skill. Boston, MA: Houghton Mifflin, 1978. (Mathematics subtest).	1-9	Mathematics computation of increasing difficulty	Norm	Grade/age levels, percentile rank, stanines, standard scores	Multiple choice format; Standardization is adequate; Useful at screening; Group test
KeyMath Diagnostic Arithmetic Test. Circle Pines, MN: American Guidance Service, 1971.	K-6	Operations including whole numbers, decimals, & fractions	Norm	Grade level standard scores	Does not yield reliable individual subtest scores
Metropolitan Achievement Test. New York: Harcourt, Brace, Jovanovich, 1978.	K-9	Computation of single digit numbers to complex multiplication & division	Norm	Percentile rank, stanines, grade level, standard scores	Multiple choice format; Normative sample is adequate; reliability and validity are adequate; useful at at screening, group test.
Stanford Achievement Tests. New York: Harcourt, Brace, Jovanovich, Inc., 1973.	1.5-9.5	Operations including whole numbers, fractions, & decimals	Norm	Grade/age levels, percentiles, standard scores	Lower & upper extensions available, group test, Standardization excellent
Stanford Diagnostic Mathematics Test. New York: Harcourt, Brace, Jovanovich, 1976.	1-12	Operations include whole numbers, decimals, & fractions	Norm	Grade level, percentiles, stanines	Four levels, group administered, standardization excellent

MATHEMATICS CALCULATION

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Wide Range Achievement Test (Revised) Wilmington, DE: Jastak Associates, Inc., 1978.	K-12	Counting, written computation	Norm	Grade level, percentiles, standard scores	Limited behavior sampling, inadequate standardization, no reliability & validity data
Woodcock-Johnson Psycho-Educational Battery. (Tests of Achievement)	K-12	Written computation including whole numbers, decimals, & fractions, basic algebra & trigonometry	Norm	Grade/age levels, percentiles, standard scores	Adequate standardization

MATH REASONING

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Kraner Preschool Math Inventory. Hingham, MA: Teaching Resources Corporation, 1976.	Preschool - 2	Counting, sequence, measurement, spatial and directional concepts, geometry	Criterion	Age level	Group screening test available with test kit, small standardization sample, informal developmental measure
Metropolitan Achievement Test. New York NY: Harcourt, Brace, Jovanovich, 1978. (Mathematical Concepts and Problem Solving)	K-9	Number systems, measurement, place value, sets, geometry, problem solving	Norm	Grade level, percentile rank, stanine, standard scores	Adequate standardization, group test, multiple choice format
Peabody Individual Achievement Test. New York: Harcourt, Brace, Jovanovich, Inc., 1976.	K-12	Mental arithmetic (with visual and auditory stimulus)	Norm	Grade/age levels, percentile rank at age & grade, standard score	Individual, multiple choice format, designed as a screening test
Stanford Achievement Tests. New York: Harcourt, Brace, Jovanovich, Inc., 1973.	1.5-9.5	Math concepts & applications	Norm	Grade/ age levels, percentiles, standard scores	Lower & upper extensions available, group test, standardization excellent six levels
Stanford Diagnostic Mathematics Test. New York: Harcourt, Brace, 1976.	1-12	Numeration, number systems, applications	Norm	Scaled scores, grade level, percentile rank, stanines	Four levels, group administered, standardization excellent
Woodcock-Johnson Psycho-Educational Battery. (Tests of Achievement) Hingham, MA: Teaching Resources, 1977.	1-12	Applied problems (visual and auditory stimulus) including time, measurement money, fractions	Norm	Grade/age levels, percentiles, functioning levels, standard scores	Adequate standardization

MATH REASONING

Test and Publisher	Grade Ranges	Components Evaluated	Norm or Criterion Referenced	Scores Obtained	Comments
Brigance Diagnostic Inventory of Early Development. North Billerica, MA: Curriculum Associates, 1978.	Preschool - 2 (Birth to 7 years)	Number concepts, time, money	Criterion	Age level	Informal developmental measure, useful in planning instruction
Brigance Diagnostic Inventory of Basic Skills. North Billerica, MA: Curriculum Associates, 1976, 77.	K-6	Measurement, geometry, functional skills, math vocabulary	Criterion	Grade level	Informal measure, useful in planning instruction
Brigance Diagnostic Inventory of Essential Skills. North Billerica, MA: Curriculum Associates, 1978.	4-11	Measurement, metrics, functional skills	Criterion	Grade level	Informal measure, useful in planning instruction
California Achievement Tests. Monterey, CA: CTB/McGraw Hill, 1977, 78. (Mathematics Concepts & Problems)	1.5-12	Measurement, sequences, money, time, geometry, place value	Norm	Grade level, percentile ranks, stanines, scaled scores	Reliability is adequate, validity data not described in manual, useful at screening, multiple choice format, group test
Iowa Test of Basic Skills. Boston, MA: Houghton Mifflin, 1978. (Mathematical Concepts)	1-9	Number concepts, time, money, measurement, fractions.	Norm	Grade/age levels, percentiles, stanines, standard scores	Adequate standardization, group test, useful at screening, multiple choice format
KeyMath Diagnostic Arithmetic Test. Circle Pines, MN: American Guidance Service, 1971, 76.	K-6	Money, missing elements, word problems, measurement, time numeration, geometry, symbols, fractions	Norm	Grade level standard scores	Does not yield reliable individual subtest scores

Appendix C

SCREENING PROCEDURES

MARYLAND LEARNING DISABILITIES PROJECT

Procedures for Completing Elementary ARD School Referral

The individual referring the student should complete the referral form in its entirety.

Reason for Referral

Describe the student's problem(s) as specifically as possible. "Cannot do the work" or "problems with math" are too general. Rather, one should specify what work the student cannot do, what essential skills the student is lacking, what specific math skills the student has yet to master, etc. It is important to attach work samples, particularly those which depict problem areas.

What do you hope to obtain from this referral?

Specifically, what information regarding this student would be of the most help to you.

What do you see as this student's strengths?

Every individual has some area of strength(s) or relative strength. These strengths can be of considerable importance in determining teaching techniques which will be successful with the student.

What interventions have been attempted?

Check those intervention strategies that have been tried prior to this referral. Narrative comments on the success of these interventions would be helpful.

Please rate the student's level of functioning as compared to others in his class.

In the academic areas which are appropriate to the subjects that you teach, rate this student's level of performance in comparison with his classmates. Wherever possible, estimate the grade level at which this student is performing in each of the specified areas. For elementary grade

students, information regarding reading and mathematics instructional levels and programs should be included.

Please evaluate the student in comparison to other students in the same grade by checking problems frequently observed.

Two types of problem behaviors will be recorded in this section. The first type includes academic skill areas. Specific problems are listed in the areas of mathematics, reading, written and oral expression, and listening comprehension. One should consider expectancies for students in the same grade before noting that a problem exists. It is particularly important that you specify problems in the academic areas where the student's functioning is below average.

In addition to academic skills you are asked to identify problems with speech, motor skills, attention, and behaviors.

MARYLAND LEARNING DISABILITIES PROJECT
Elementary School Student ARD Referral

Date_____ School_____ Referring Person_____

Student_____ Birthdate_____ Age_____ Grade_____

1. Reason for Referral (Describe the presenting problem(s)) and ATTACH WORK SAMPLES.

2. What do you hope to obtain from this referral?

3. What do you see as this student's strengths?

4. What interventions have been attempted?

___ Student conference
___ Note/call to parent
___ Parent conference
___ Consultation with specialists
___ Consultation with colleagues
___ Referral to counselor
___ Behavior management techniques
___ Adjusted workload
___ Alternative methods and techniques
___ Modifying materials and presentations
___ Change of text/materials
___ Change in grouping

5. Please rate the student's level of functioning as compared to other classmates and indicate grade level if known:

	Above Average	Average	Below Average	Estimated Grade Level
1. Listening Comprehension	_____	_____	_____	_____
2. Oral Expression	_____	_____	_____	_____
3. Basic Reading Skills	_____	_____	_____	_____
4. Reading Comprehension	_____	_____	_____	_____
5. Written Expression	_____	_____	_____	_____
6. Math Calculation	_____	_____	_____	_____
7. Math Reasoning	_____	_____	_____	_____

6. Instructional Series (Please specify book and series student is working in at the time of referral):

A. Reading_____ C. Language Arts_____

B. Mathematics_____ D. Other (if appropriate)_____

BASED ON YOUR OBSERVATIONS, PLEASE EVALUATE THE STUDENT IN COMPARISON TO OTHER STUDENTS IN THE SAME GRADE BY CHECKING PROBLEMS FREQUENTLY OBSERVED:

LISTENING COMPREHENSION

__ Difficulty understanding spoken language
__ Difficulty following verbal directions

ORAL EXPRESSION

__ Difficulty expressing thoughts and ideas
__ Limited speaking vocabulary

READING

__ Difficulty with letter/word recognition
__ Word guessing
__ Slow, constant sounding out of words
__ Difficulty with comprehension (factual, critical)

WRITTEN EXPRESSION

__ Difficulty with spelling
__ Difficulty with writing speed
__ Difficulty completing written work
__ Difficulty with punctuation
__ Difficulty writing a sentence
__ Difficulty organizing sentences and ideas into meaningful paragraphs

MATHEMATICS

__ Difficulty with number recognition
__ Difficulty with number concepts
__ Difficulty with basic operations
  __ Addition __ Multiplication
  __ Subtraction __ Division
__ Difficulty understanding place value
__ Difficulty solving word problems

DISCRIMINATION

__ Difficulty discriminating letter symbols
__ Difficulty discriminating letter sounds

MEMORY

__ Difficulty remembering what is seen
__ Difficulty remembering what is heard
__ Difficulty retaining information over a period of time

VISUAL MOTOR COORDINATION

__ Difficulty with small motor tasks
__ Difficulty with paper/pencil tasks
__ Difficulty copying from the board

ATTENTION/ORGANIZATION/ACTIVITY LEVEL

__ Difficulty beginning a task
__ Difficulty maintaining attention
__ Easily distracted
__ Loses or forgets work and/or materials
__ Difficulty with organization
__ Late for class
__ Difficulty completing tasks
__ Difficulty with changes in routine
__ Overactive
__ Underactive

SOCIAL/EMOTIONAL

__ Lacks motivation
__ Lacks self-control
__ Easily frustrated
__ Sudden changes in mood throughout day
__ Inconsistency in performance
__ Needs constant approval
__ Interrupts and distracts class
__ Unusually aggressive toward others
__ Unusually shy or withdrawn
__ Difficulty interpreting social cues
__ Difficulty making and keeping friends
__ Doesn't accept responsibility for own behavior
__ Easily influenced by others

SPEECH

__ Stutters
__ Difficulty articulating speech sounds
__ Unusual voice quality

Other comments:

MARYLAND LEARNING DISABILITIES PROJECT

Procedures for Completing Secondary

School ARD Referral (Parts I & II)

The individual referring the student should complete the Referral form, Part I, in its entirety.

1. Reason for Referral

   Describe the student's problem(s) as you have observed it in your classroom using examples when appropriate. Attach work samples which illustrate the problem area.

2. What do you hope to obtain by this referral?

   State what information you hope to obtain with this referral

3. What do you see as this student's strengths?

   Every individual has some area of strength(s) or relative strength. These strengths may be observed in academics, social or sport activities.

4. What interventions have been attempted?

   Check those intervention strategies that have been tried prior to this referral. Narrative comments on the success of these interventions would be helpful.

5. Complete Part II of Referral and submit to _____.

The referring teacher should complete Part I and Part II of the Referral and submit it to the correct school personnel.

MARYLAND LEARNING DISABILITIES PROJECT
Secondary School Student ARD Referral, Part I

Date _____ School _____

Student _____ Birthdate _____

Age _____ Grade _____ Referring Person _____

1. Reason for Referral (Describe the presenting problem(s) and ATTATCH WORK SAMPLES

2. What do you hope to obtain from this referral?

3. What do you see as this student's strengths?

4. What interventions have been attempted?

___ Student conference
___ Alternative methods and techniques
___ Adjusted workload
___ Referral to guidance
___ Behavior management techniques
___ Note/Call to parent
___ Detention/suspension
___ Modifying materials and presentations
___ Change of text
___ Change in schedule
___ Parent conference
___ Consultation with specialists
___ Consultation with colleagues

5. Complete Part II of Referral and submit to

_____.

Procedures for Completing Secondary School

ARD Referral, Part II

Part II of the referral shall be filled out by each of the student's teachers. This form should be sent out by the review committee after receipt of the Referral from the referring teacher.

Evaluate the student in comparison to other classmates by checking problems frequently observed.

Behaviors that are frequently observed should be noted in each area. Frequency of the behaviors is of particular concern in evaluating the student's performance. Many of the behaviors listed may be occasionally exhibited by students but it is the student with a consistent pattern of behaviors that should be noted.

Please rate the student's level of functioning as compared to other classmates and indicate grade level if known.

In the academic areas which are appropriate and observable in your class, rate this student's performance in comparison to other classmates.

At what grade level is this student functioning in your subject area.

Circle an estimate of grade level functioning in your subject area.

Has the student received any deficiencies/interim reports/advisory notices etc. in your class?

Note whether or not the student has and in which quarters.

Report card grade for your subject.

Note the report card grade for each quarter.

Attendance

Note the number of days absent for each quarter.

Comments

Note any comments on other side of sheet.

Please return to _____ by _____. ATTACH WORK SAMPLES
(date)

MARYLAND LEARNING DISABILITIES PROJECT
SECONDARY SCHOOL STUDENT ARD REFERRAL, PART II

Student_____ Teacher_____ Subject_____

BASED ON YOUR OBSERVATIONS, PLEASE EVALUATE THE STUDENT IN COMPARISON TO OTHER CLASSMATES BY CHECKING PROBLEMS FREQUENTLY OBSERVED.

LISTENING COMPREHENSION

__ Difficulty understanding spoken language
__ Difficulty following verbal directions

ORAL EXPRESSION

__ Difficulty expressing thoughts and ideas
__ Limited speaking vocabulary

READING

__ Difficulty with basic skills
__ Difficulty with comprehension
__ Difficulty reading assigned text(s) or material presented

WRITTEN EXPRESSION

__ Difficulty with spelling
__ Difficulty with mechanics of writing
__ Difficulty organizing sentences and ideas into paragraphs

MATHEMATICS (if appropriate)

__ Difficulty with basic operations
__ Addition __ Multiplication
__ Subtraction __ Division
__ Difficulty solving word problems

MEMORY

__ Difficulty retaining information over time

ATTENTION/ORGANIZATION/ACTIVITY LEVEL

__ Difficulty maintaining attention
__ Easily distracted
__ Loses or forgets work and/or materials
__ Late for class
__ Underactive
__ Overactive
__ Difficulty with organization

DAILY WORK

__ Does not attend class regularly
__ Incomplete homework assignments
__ Poor test grades
__ Does not complete in class assignments
__ Does not participate in class

SOCIAL/EMOTIONAL

__ Lacks motivation
__ Sudden changes in mood throughout day
__ Lacks self-control
__ Inconsistency in performance
__ Needs constant approval
__ Unusually aggressive toward others
__ Unusually shy or withdrawn
__ Difficulty interpreting social cues
__ Difficulty making and keeping friends
__ Doesn't accept responsibility for own behavior
__ Easily influenced by others

SPEECH

__ Stutters __ Unusual voice quality
__ Difficulty articulating speech sounds

PLEASE RATE THE STUDENT'S LEVEL OF FUNCTIONING AS COMPARED TO OTHER CLASSMATES:

	Above Average	Average	Below Average
Reading	_____	_____	_____
Mathematics (if applicable)	_____	_____	_____
Written Expression	_____	_____	_____
Oral Expression	_____	_____	_____
Listening Comprehension	_____	_____	_____

At what grade level is this student functioning in your subject area?
Circle: 1 2 3 4 5 6 7 8 9 10 11 12

Has the student received any deficiencies/interim report(s)/advisory notice(s) in your class?
Yes_____ No_____ When_____

Report card grades for your subject: 1st qtr._____ 2nd qtr._____ 3rd qtr._____ 4th qtr._____

Student's attendance (days absent) in your class: 1st qtr.___ 2nd qtr.___ 3rd qtr.___ 4th qtr.___

MARYLAND LEARNING DISABILITIES PROJECT

Procedures for Completing Educational History

The educational history information should be obtained from the student's cumulative, confidential, and health files. This information may be gathered by the student's classroom teacher, counselor, or school team member. The completed form should be attached to the completed referral form.

Directions for use:

1. Complete identifying data.
2. The health information may be kept in a health file which is separate from the student's cumulative file. The school nurse or health aide should be a valuable source in obtaining this information.

   Hearing Screening - note the most recent test by date and result, i.e. pass or fail. Note frequency and decibles level if a failure is noted. Indicate if the student has failed any screenings prior to the most recent results.

   Vision Screening - note the most recent test by date and result, i.e. pass or fail. Indicate if the student had failed any screenings prior to the most recent results.

School History

Note the student's attendance record for the present year up to time of referral. Indicate any years in which the student's attendance exceeded 20 days of absence.

Academic Performance

This information is usually available from report cards, PDS-1 and 2, and previous teacher comments. Any difficulties in academic or social

performance should be noted by grade. Also any noticable trends or sudden shifts in performance from year to year should be noted.

Previous Schools

This information is usually available from the student's school registration form. Note the schools by name, grade(s), and years attended.

Previous Services

Obtain from cumulative and/or confidential files.

Confidential Material

If confidential information is available, note date and summarize the results and recommendation(s).

Test Information

Information regarding previous school testing is available from the test card in the cumulative file. When possible, the test card should be copied and attached. If not attached, the previous tests given should be listed by name, date, and results.

MARYLAND LEARNING DISABILITIES PROJECT

Educational History

DATE: _____

I. Identifying Information

Student _____ Grade _____

Date of birth _____ Age _____

Parent/Guardian name _____

Address _____

Telephone _____
home work

II. Health Information

	Date	Results
Hearing Screening (most recent)		
Vision Screening (most recent)		

If student has failed a screening prior to results listed above, indicate which screening and results.

_____

III. School History Information

Attendance Record - Current school year 19___ _____absent

_____present

(Note grades in which absences exceeded 20 days)

GRADE	ABSENT	PRESENT

Academic Performance

List any academic difficulties or pertinent information by grade from PDS 1 & 2, report cards & teacher comments.

_____

_____

Previous Schools Attended (School, grade and year):

School	Grade	Year	School	Grade	Year
_____	____	____	_____	____	_____
_____	____	____	_____	____	_____
_____	____	____	_____	____	_____

Grade(s) Retained_____

List any previous special or remedial services provided (grade and type of service)

_____

_____

Confidential material available on this student _____Yes ____No

DATE

_____Psychological _____

_____Medical _____

_____Other (list) _____

List pertinent results or recommendations stated in above reports.

_____

_____

_____

IV. Test Information

Attach a copy of the student's test card. If test card is not attached, fill out the information below.

NAME OF TEST DATE RESULTS

_____

_____

_____

_____

_____

MARYLAND LEARNING DISABILITIES PROJECT

Procedures for Completing Parent(s) Guardian Questionnaire

The Parent(s)/ Guardian Questionnaire should be completed early in the assessment process because it may reveal previously unknown information which is useful or even essential in the assessment process. The best way to obtain this information is through a parent interview. If the parent(s) are available before or after the ARD screening meeting, this would be a good time to schedule the interview.

Another method used in a number of pilot schools is to inform the parent(s) by phone during the screening process that the questionnaire is being mailed to them. They can then complete it and bring it to the screening meeting. The questionnaire should be sent only when the parent(s) has the necessary skills to comfortably complete the questionnaire. Under this procedure the parent(s) is given a phone number to call for assistance if needed. The questionnaire can then be reviewed and any questions can be clarified in a follow-up meeting, e.g. before the ARD screening meeting or by phone.

There will be times when the parent is unavailable for the interview and it is inappropriate to mail the questionnaire to the parent. In these cases the ARD should assign a professional trained in parent interviewing to make a home visit.

BY WHOM

In assigning the responsibility for the parent interview, the ARD chairperson will consider only those professionals who are skilled in parent interviewing. Personnel in the pilot schools who have been assigned responsibility for obtaining the parent interview are psychologists, pupil personnel workers, principals, special education teachers, guidance counselors, nurses, and regular education teachers. If the personnel have

not had prior training in parent interviewing, such training should be made available to them.

PARENT/GUARDIAN QUESTIONNAIRE

All information on this form will be strictly confidential and will be used only to help us in determining an appropriate educational program for your child. This form will be kept in your child's confidential folder and will be shared only with your knowledge and consent. If you have any questions please call _____
NAME TITLE TELEPHONE

Today's Date _____ School _____

Student _____ Teacher _____

Birthdate _____ Grade _____

FAMILY DATA Age	Household Members: Relationship	Education (Highest Grade Completed)	Occupation (If Appropriate)

Describe any serious concerns you have about your child

_____

_____

_____

Describe any school related problems other family members have experienced.

_____

_____

Is English the usual language spoken at home? Yes ___ No ___ Other Language _____

PREGNANCY & BIRTH

Describe any serious health problems mother experienced during this or other pregnancies.

_____

_____

During what month(s) of the pregnancy did these problems occur?_____

_____

Birthweight_____ Apgar Scores_____/_____

Did any of the following occur during the birth process?

Premature_____ Transfusion_____ Caesarian section_____
Breech Birth_____ Prolonged labor_____ Oxygen problem_____
Blood Incompatability (RH Factor)_____ Fetal distress_____

Other birth problems and/or concerns:

_____

_____

Describe any difficulties your child had in learning to eat, sleep, sit, walk, or talk.

_____

_____

Briefly describe any traumatic events which the child has experienced, for example: death of close relative, divorce, family crisis._____

_____

_____

MEDICAL HISTORY

Please check below any illnesses or problems the child has had:

___Physical defect
___Eye problems
___Ear problems
___Operations
___Temperatures above 104°
___Frequent colds
___Frequent sore throats
___Headaches
___Heart disease
___Allergies
___Asthma
___Epilepsy
___Diabetes
___Other:_____
___Speech problems
___Dietary problems
___Serious accidents or injuries

Describe any of the problems checked above:_____

_____

_____

Has the child ever been hospitalized? No____ Yes____ Reason:_____

Age at time of hospitalization:_____How long in hospital?_____

Is the child under treatment or medication at present? (If Yes, please explain

_____

How would you rate the child's general health? (circle) excellent - good - fair - poor

SOCIAL/BEHAVIORAL CHARACTERISTICS

Please check any of the following behaviors which describe your child:

___Flexible
___Outgoing
___Consistently short attention span
___Daydreams
___Cooperative
___Nightmares
___Temper tantrums
___Unreasonable fears
___Gets idea quickly
___Fantasies
___Artistic
___Frequently tells lies
___Avoids homework
___Uncooperative
___Frequently talks to self
___Sleepwalking
___Lacks motivation
___Creative
___Bedwetting
___Thumb Sucking
___Nailbiting
___Mechanical
___Overactive
___Athletic
___Musical
___Rocking
___Underactive
___Self-Confident
___Enjoys reading
___Frequently late
___Doesn't seem to understand questions or directions
___Difficulty making and keeping friends
___Easily influenced by others
___Difficulty using numbers
___Lacks self-control
___Frequent sudden changes in mood
___Excessive inconsistency in behavior
___Needs constant approval or reassurance
___Unusually aggressive towards others
___Unusually shy or withdrawn
___Difficulty completing jobs & activities
___Difficulty with changes in routine
___Difficulty with organization
___Avoids reading
___Difficulty telling time

Comment on any behaviors that particularly concern you:_____

_____

_____

Has your child had any evaluations that the school may be unaware of:

educational____ psychological____ medical____ other____

Explain (what, when, by whom)_____

_____

What are your child's interests?_____

_____

What does your child do well?_____

_____

What do you like best about your child?_____

_____

_____

How do you think the school can help your child?_____

_____

Is there any additional information which you feel will help us to understand your child better?_____

_____

_____

I understand that this information will be used to help find out if my child has a learning handicap and will be used by school professionals only. This material will be kept in my child's confidential folder.

_____
Interviewer's Signature

_____
Parent Signature

MARYLAND LEARNING DISABILITIES PROJECT

Procedures for Classroom Observation

PURPOSE

The law states that "at least one team member other than the child's regular teacher shall observe the child's academic performance in a regular classroom setting." Information from the observation(s) can be useful in the following ways:

(1) To cross validate teacher perceptions as reported on the referral form,

(2) To help in decision making regarding assessment,

(3) To cross validate and compare observations made by clinicians in other settings such as during one-to-one testing,

(4) To aid in determination of handicapping condition,

(5) To assist in identifying target areas for setting objectives on the IEP, and

(6) To aid in selecting the appropriate level of service.

FORMAT

Review referral form. Note areas in which the child has been rated as below average. Observations need not be limited but must include the areas of concern indicated on the referral form.

Section 1 - Describe the classroom setting in which you are observing. Be certain to include the approximate size of class, room arrangement, the subject area(s) being taught, the specific activities in which the student is engaged, and materials being used.

Section 2 - Note the student's behavior and specific performance on the activities described in Section 1. When observing students in the classroom, it is important to avoid judgement, evaluations, and interpretations about why the student is performing in a given manner. Be

certain to record the specific behaviors observed. When the student's dialogue is important, record what is said rather than a summary statement. For example, record: Chris said, "This work is too hard, I won't do it," rather than Chris refused to do the work.

Section 3 - Note the student's perceived areas of strength.

Section 4 - Note activities the student particularly seems to dislike or avoid.

Section 5 - Mark the appropriate point on the seven-point scale that best describes the student in each of the areas listed on the form: attention to task, organization of the task, independent work habits, ability to complete task assigned, distractibility, need for teacher support, need for peer support. Add any comments that might help to explain or clarify the rating.

Section 6 - Use the space at the bottom of the form to add any additional comments.

MARYLAND LEARNING DISABILITIES PROJECT

Classroom Observation

Student_____ Date:_____

Observer:_____ Time:_____

Subject Area Observed:_____ Teacher:_____

THE STUDENT MUST BE OBSERVED IN THOSE AREA(S) IN WHICH PROBLEMS WERE INDICATED ON THE REFERRAL

1. Description of task and setting: (Include specific activities and classroom arrangement) Pupil/Teacher Ratio_____

2. Please comment on specific performance observed. Observations need not be limited to but must include the academic areas of concern from the referral.

3. Student's strengths observed:

4. Tasks student appears to avoid or dislike in this observation:

5. Please rate the student's:

	Above Average	Average	Below Average	COMMENTS
Attention to task				
Organization of the task				
Independent work habits				
Ability to complete task assigned				

	Below Average	Average	Above Average
Distractibility			
Need for teacher support			
Need for peer support			

6. Comments:

Appendix D

THE SEVERE DISCREPANCY GUIDELINE AND TRANSFORMATION TABLES

TABLE 6.1

A GUIDELINE FOR NUMERICAL COMPARISONS
OF EXPECTED ACHIEVEMENT AND ACTUAL ACHIEVEMENT

I.Q. Range	Educational Expectancy** Range	Severe Discrepancy* Cut Off Score Range
130 - 139	120 - 128	97 - 105
120 - 129	114 - 120	91 - 97
110 - 119	107 - 113	84 - 90
100 - 109	100 - 106	77 - 83
90 - 99	94 - 99	71 - 76
80 - 89	87 - 92	64 - 69
70 - 79	80 - 86	57 - 63

* Cut off scores are 1.5 SD below the Educational Expectancy score where the MEAN is 100 and the SD is 15. The measures should be reliable (.80 or better), properly administered, appropriately normed and standardized and positively correlated.

** Derived from McLoed, J. Educational underachievement: Toward a defensible psychometric definition. Journal of Learning Disabilities, 1979, 12, 322-330.

Woodcock Reading Mastery Tests

Procedures for converting assessment scores into age-based standard scores

Step I

Refer to the Summary of Scores illustrated on page 35 of the examiner's manual. Complete all information except the last four columns according to the directions in the manual.

Step II

The last four columns will be Mastery Score at CA, Achievement Index, Relative Mastery at CA, and Percentile Ranks. We are interested in determining the extent of reading retardation by making comparisons to chronological age instead of grade placement.

Table VII in Appendix C in the Examiner's manual will be used to obtain the mastery score at the age level (^{MS} CA) which corresponds to the subject's chronological age. The achievement index is then obtained by subtracting the ^{MS} CA from the student's MS score for each test. This procedure is a parallel procedure to that presented in Part III of the examiner's manual for determining the achievement index. (Refer to page 83 in the examiner's manual)

STEP III

The achievement index is now used to obtain values for the last two columns, Relative Mastery at CA, and Percentile Ranks. The values will be obtained by following the regular procedures and using revised Table III (with chronological ages).

Table X, Standard Scores, Stanines, and Normal Curve Equivalents (NCES) will now be used to transform the percentile rank values into equivalent standard scores (MEAN = 100, SD = 15).

Keymath Diagnostic Arithmetic Test

Procedures for converting assessment scores into age-based standard scores

Step I

Using the raw score of the total test refer to Table B-III. Using the table age column that is closest to the chronological age of the student at the time of the testing find the student's raw score and corresponding percentile.

Step II

Look up the obtained percentile in Table X and find the corresponding standard score (MEAN = 100; SD = 15). This standard score will be the most accurate age based standard score available for this test.[1]

[1] Assessors should be cautioned in that both the Keymath and the Woodcock are tests that were grade rather than age normed. The ages of the students in the norming samples are not known by the producer. Therefore, these ages are extrapolated based upon the mean age of children at each grade level.

Revised

TABLE III – Letter Identification

Relative Mastery and Percentile Rank for Chronological Age

Total Group

Percentile Rank

(MS) – (MS$_{CA}$)	Relative Mastery at CA	4-7 to 6-1	6-2 to 6-10	6-11 to 7-8	7-9 to 8-9	8-10 to 9-3	9-4 to 9-5	9-6 to 9-7
40	—	99	—	—	—	—	—	—
39	—	98	—	—	—	99	—	—
38	—	98	—	99	99	98	99	—
37	—	97	99	98	98	98	98	99
36	—	97	98	98	98	98	98	98
35	—	96	98	98	98	98	98	98
34	—	96	98	98	98	98	98	98
33	—	95	97	97	98	97	98	98
32	—	94	96	97	98	97	97	98
31	—	94	96	97	97	97	97	98
30	—	93	95	96	97	96	97	97
29	100[1]	92	94	96	96	96	97	97
28	99	91	94	95	96	96	96	96
27	99	90	93	95	95	95	96	96
26	99	89	92	94	95	95	95	96
25	99	89	91	93	94	95	95	95
24	99	88	90	92	94	94	95	95
23	99	87	89	91	93	93	94	94
22	99	85	88	90	92	93	93	94
21	99	84	87	89	91	92	92	93
20	99	83	86	88	90	91	91	92
19	99	82	84	86	89	90	90	91
18	98	80	83	85	88	89	89	90
17	98	79	82	84	86	88	88	89
16	98	78	80	82	85	86	86	88
15	98	76	79	81	83	85	85	86
14	98	75	77	79	82	83	84	85
13	97	73	75	78	80	81	82	83
12	97	72	44	76	78	79	80	80
11	97	70	72	73	77	77	78	78
10	96	68	70	71	75	75	76	76
9	96	67	68	70	73	73	74	73
8	96	65	66	69	70	70	71	70
7	95	63	64	67	68	68	69	68
6	95	61	62	64	66	66	66	66
5	94	60	60	62	63	63	63	63
4	93	58	58	60	60	60	60	60
3	93	56	56	58	58	58	58	58
2	92	54	54	55	55	55	55	55
1	91	52	52	53	53	53	52	53
0	90	50	50	50	50	50	50	50
– 1	89	49	48	48	48	48	46	48
– 2	88	47	47	46	45	45	43	45
– 3	87	46	45	44	43	43	40	42
– 4	85	44	43	42	40	40	37	40
– 5	84	42	42	40	38	37	34	37
– 6	82	41	40	38	35	33	31	33
– 7	81	40	38	36	32	30	28	29
– 8	79	38	37	34	30	27	25	25
– 9	77	37	35	33	28	25	22	22
–10	75	35	34	31	25	22	20	19
–11	73	34	32	29	23	20	17	16
–12	71	33	31	27	21	18	15	15
–13	68	31	29	25	20	16	13	12
–14	66	30	28	24	18	14	11	10
–15	63	29	26	22	16	13	10	8

Percentile Rank

(MS) – (MS$_{CA}$)	Relative Mastery at CA	4-7 to 6-1	6-2 to 6-10	6-11 to 7-8	7-9 to 8-9	8-10 to 9-3	9-4 to 9-5	9-6 to 9-7
–16	61	28	25	21	15	11	8	7
–17	58	26	24	20	13	10	7	5
–18	55	25	23	18	12	8	6	4
–19	53	24	21	17	11	7	5	3
–20	50	22	20	16	10	6	4	3
–21	47	21	19	15	9	6	4	2
–22	45	20	17	13	8	5	3	2
–23	42	19	16	12	7	4	3	2
–24	39	18	15	11	6	4	3	2
–25	37	17	14	10	6	3	2	1
–26	34	16	13	10	5	3	2	—
–27	32	15	12	9	5	3	2	—
–28	29	14	11	8	4	2	2	—
–29	27	13	10	7	4	2	2	—
–30	25	12	9	7	4	2	1	—
–31	23	12	9	6	3	2	—	—
–32	21	11	8	5	3	2	—	—
–33	19	10	7	5	3	2	—	—
–34	18	9	7	4	2	2	—	—
–35	16	8	6	4	2	1	—	—
–36	15	8	6	3	2	—	—	—
–37	13	7	5	3	2	—	—	—
–38	12	7	5	3	2	—	—	—
–39	11	6	4	2	2	—	—	—
–40	10	6	4	2	2	—	—	—
–41	9	6	4	2	1	—	—	—
–42	8	5	3	2	—	—	—	—
–43	7	5	3	2	—	—	—	—
–44	7	5	3	2	—	—	—	—
–45	6	4	3	2	—	—	—	—
–46	5	4	2	2	—	—	—	—
–47	5	4	2	2	—	—	—	—
–48	4	3	2	1	—	—	—	—
–49	4	3	2	—	—	—	—	—
–50	4	3	2	—	—	—	—	—
–51	3	3	2	—	—	—	—	—
–52	3	2	2	—	—	—	—	—
–53	3	2	2	—	—	—	—	—
–54	2	2	2	—	—	—	—	—
–55	2	2	1	—	—	—	—	—
–56	2	2	—	—	—	—	—	—
–57	2	2	—	—	—	—	—	—
–58	2	2	—	—	—	—	—	—
–59	1	2	—	—	—	—	—	—
–60	1	1	—	—	—	—	—	—
–61	1	—	—	—	—	—	—	—
–62	1	—	—	—	—	—	—	—
–63	1	—	—	—	—	—	—	—
–64	1	—	—	—	—	—	—	—
–65	1	—	—	—	—	—	—	—
–66	1	—	—	—	—	—	—	—
–67	1	—	—	—	—	—	—	—
–68	1	—	—	—	—	—	—	—
–69	0[2]	—	—	—	—	—	—	—

[1]Approximate value (more than 99.5%)
[2]Approximate value (less than 0.5%)

Revised

Total Group

TABLE III – Word Identification

Relative Mastery and Percentile Rank for Chronological Age

Percentile Rank

(MS) - (MS)CA	Relative Mastery at CA	<6-4	6-5 to 6-6	6-7 to 7-2	7-3 to 7-9	7-10 to 8-4	8-5 to 8-10	8-11 to 9-6	9-7 to 10-5	10-6 to 11-11	12-0 to 13-0	13-1 to 15-3	15-4 to 16-6	16-7 to 18-4
74+	—	99	99	—	—	—	—	—	—	—	—	—	—	—
73	—	98	98	—	—	—	—	—	—	—	—	—	—	—
72	—	98	98	—	—	—	—	—	—	—	—	—	—	—
71	—	98	98	99	—	—	—	—	—	—	—	—	—	—
70	—	98	98	98	—	—	—	—	—	—	—	—	—	—
69	—	98	98	98	—	—	—	—	—	—	—	—	—	—
68	—	98	98	98	—	—	—	—	—	—	—	—	—	—
67	—	98	98	98	—	—	—	—	—	—	—	—	—	—
66	—	98	98	98	—	—	—	—	—	—	—	—	—	—
65	—	98	98	98	—	—	—	—	—	—	—	—	—	—
64	—	98	98	98	99	—	—	—	—	—	—	—	—	—
63	—	98	98	98	99	—	—	—	—	—	—	—	—	—
62	—	98	98	98	99	—	—	—	—	—	—	—	—	—
61	—	97	98	98	99	—	—	—	—	—	—	—	—	—
60	—	97	97	98	98	99	—	—	—	—	—	—	—	—
59	—	97	97	97	98	98	—	—	—	—	—	—	—	—
58	—	97	97	97	98	98	—	—	—	—	—	—	—	—
57	—	97	97	97	98	98	—	—	—	—	—	—	—	—
56	—	97	97	97	97	98	—	—	—	—	—	—	—	—
55	—	97	97	96	97	98	99	—	—	—	—	—	—	—
54	—	96	96	96	97	98	98	—	—	—	—	—	—	—
53	—	96	96	96	97	98	98	—	—	—	—	—	—	—
52	—	96	96	96	96	98	98	—	—	—	—	—	—	—
51	—	96	96	96	96	97	98	—	—	—	—	—	—	—
50	—	96	95	95	96	97	98	99	—	—	—	—	—	—
49	—	96	95	95	96	97	98	98	—	—	—	—	—	—
48	—	95	95	95	95	96	98	98	—	—	—	—	—	—
47	—	95	95	95	95	96	98	98	—	—	—	—	—	—
46	—	95	94	[illegible]	95	96	97	98	99	—	—	—	—	—
45	—	95	94	94	94	95	97	98	98	—	—	—	—	—
44	—	95	94	94	94	95	97	98	98	—	—	—	—	—
43	—	94	93	93	93	95	96	98	98	99	—	99	99	99
42	—	94	93	93	93	94	96	98	98	98	99	98	98	98
41	—	94	93	93	92	94	95	97	98	98	98	98	98	98
40	—	94	92	92	92	93	95	97	98	98	98	98	98	98
39	—	93	92	92	92	92	94	96	98	98	98	98	98	98
38	—	93	92	92	91	92	93	96	97	98	98	98	98	98
37	—	93	91	91	91	91	93	95	97	98	98	98	98	98
36	—	92	91	91	90	91	92	94	96	98	98	98	97	98
35	—	92	91	90	90	90	91	94	96	97	97	97	97	97
34	—	92	90	90	89	89	91	93	95	97	97	97	97	97
33	—	91	90	90	89	88	90	92	95	96	96	97	96	97
32	—	91	89	89	88	88	89	91	94	95	96	96	96	96
31	—	91	89	89	88	87	88	90	93	95	95	96	96	96
30	—	90	89	88	87	86	87	90	92	94	95	95	95	95
29	100[1]	90	88	88	86	85	86	89	91	93	94	94	94	94
28	99	90	88	87	86	84	86	88	90	93	94	94	94	94
27	99	90	87	86	85	84	85	87	89	92	93	93	93	93
26	99	89	87	86	84	83	84	86	88	90	92	93	92	92
25	99	89	86	85	83	82	83	85	87	90	91	92	92	91
24	99	88	86	84	82	81	82	83	86	88	90	91	91	90
23	99	87	85	83	81	80	81	82	85	87	89	90	90	89
22	99	86	84	82	80	79	80	81	84	86	88	89	89	88
21	99	86	83	81	79	77	78	80	82	85	87	88	88	87
20	99	85	82	80	78	76	77	79	81	83	85	87	86	86
19	99	84	81	79	77	75	76	77	80	82	84	86	85	85
18	98	83	80	77	76	74	75	76	78	80	83	84	84	83
17	98	82	78	76	75	73	73	75	76	79	81	83	83	82
16	98	80	77	75	73	71	72	73	75	78	80	82	81	81
15	98	78	75	73	72	70	71	72	73	76	78	80	80	80
14	98	77	74	72	71	69	70	70	72	75	77	78	78	78
13	97	75	73	70	69	68	68	69	70	73	75	77	77	76
12	97	73	71	68	68	66	67	68	68	71	73	75	75	75
11	97	72	70	67	66	65	66	66	67	69	72	73	74	73
10	96	70	68	66	65	64	64	64	65	67	70	71	72	72
9	96	68	66	64	63	63	63	63	64	66	68	69	70	70
8	96	66	65	63	62	61	61	62	62	64	66	67	68	67
7	95	64	63	61	60	60	60	60	61	62	64	65	66	65
6	95	62	61	60	59	59	59	59	60	60	62	62	64	63
5	94	60	60	58	57	57	57	57	58	59	60	60	62	60
4	93	58	58	57	56	56	56	56	57	57	58	58	60	58
3	93	56	56	55	54	55	54	54	55	55	56	56	58	56
2	92	54	54	54	53	53	53	53	54	54	54	54	55	54
1	91	52	52	52	51	52	52	51	52	52	52	52	52	52
0	90	50	50	50	50	50	50	50	50	50	50	50	50	50
−1	89	48	48	49	49	49	49	48	48	48	38	48	47	47
−2	88	46	47	48	48	48	48	47	47	46	36	45	45	45
−3	87	45	45	46	46	46	46	46	45	44	34	43	42	42
−4	85	43	44	45	45	45	45	44	43	43	42	41	40	40
−5	84	41	42	44	43	44	44	43	42	41	40	40	38	38
−6	82	40	40	42	42	42	42	41	40	39	38	38	36	35
−7	81	38	39	41	41	41	41	40	39	37	35	35	34	32	30
−8	79	36	37	40	40	40	40	39	37	35	33	33	32	30	28
−9	77	35	36	38	38	39	39	37	36	34	33	32	30	28	26
−10	75	33	34	37	37	38	38	36	34	33	32	30	28	26	24
−11	73	31	33	35	36	37	37	35	33	31	30	29	27	24	22
−12	71	30	31	34	35	35	35	34	32	30	28	27	25	22	20
−13	68	28	30	33	34	34	34	33	30	28	27	25	24	21	19
−14	66	26	29	32	33	33	33	31	29	27	25	24	22	19	17
−15	63	25	27	30	32	32	32	30	28	25	24	22	20	18	16
−16	61	23	26	29	30	31	31	29	26	24	23	21	19	16	14
−17	58	22	25	28	29	30	30	28	25	23	21	20	17	15	13
−18	55	20	24	27	28	29	29	27	24	21	20	18	16	13	11
−19	53	19	23	25	27	28	28	26	23	20	19	17	14	12	10
−20	50	18	21	24	26	27	27	25	22	19	18	16	13	11	9
−21	47	17	20	23	25	26	26	24	21	18	16	15	12	10	8
−22	45	16	19	22	24	25	25	23	20	17	15	14	11	9	7
−23	42	15	18	21	23	24	24	22	19	16	14	12	10	8	6
−24	39	14	17	20	23	23	23	21	18	15	13	11	9	7	5
−25	37	13	16	19	22	22	22	20	17	14	12	10	8	6	4
−26	34	12	16	18	21	22	21	19	16	13	11	10	7	6	4
−27	32	11	15	17	20	21	20	18	15	12	10	9	7	5	3
−28	29	10	14	16	19	20	20	18	14	11	10	8	6	5	3
−29	27	10	13	16	18	19	19	17	14	10	9	7	5	4	3
−30	25	9	12	15	18	18	18	16	13	9	8	6	5	4	3
−31	23	9	11	14	17	18	17	15	12	9	7	6	4	3	2
−32	21	8	11	13	16	17	16	15	11	8	7	5	4	3	2
−33	19	8	10	13	15	16	16	14	11	7	6	5	3	3	2
−34	18	7	10	12	15	16	15	13	10	7	6	5	3	2	2
−35	16	6	9	11	14	15	14	13	10	6	5	4	3	2	2

[1]Approximate value (more than 99.5%)

Revised

TABLE III – Word Identification (Cont.)

Total Group

Relative Mastery and Percentile Rank for Chronological Age

Percentile Ranks

(MS) - (MS)$_{CA}$	Relative Mastery at CA	<6-4 to 6-4	6-5 to 6-6	6-7 to 7-2	7-3 to 7-9	7-10 to 8-4	8-5 to 8-10	8-11 to 9-6	9-7 to 10-5	10-6 to 11-11	12-0 to 13-0	13-1 to 15-3	15-4 to 16-4	16-5 to 18-4
−36	15	6	8	11	13	14	14	12	9	6	5	4	3	2
−37	13	5	8	10	13	14	13	12	9	6	5	4	2	2
−38	12	5	7	10	12	13	12	11	8	5	4	3	2	2
−39	11	5	7	9	12	13	12	11	8	5	4	3	2	2
−40	10	4	6	9	11	12	11	10	7	5	4	3	2	2
−41	9	4	6	8	11	12	11	10	7	5	4	3	2	2
−42	8	4	5	8	10	11	10	9	7	4	4	2	2	1
−43	7	4	5	8	10	11	10	9	6	4	3	2	1	—
−44	7	3	5	7	9	10	10	9	6	4	3	2	—	—
−45	6	3	4	7	9	10	9	8	6	3	3	2	—	—
−46	5	3	4	6	9	9	9	8	5	3	3	2	—	—
−47	5	2	3	6	8	9	8	7	5	3	3	2	—	—
−48	4	2	3	5	8	9	8	7	5	3	2	2	—	—
−49	4	2	3	5	7	8	8	6	4	3	2	2	—	—
−50	4	2	3	4	7	8	7	6	4	2	2	1	—	—
−51	3	2	2	4	7	8	7	6	4	2	2	—	—	—
−52	3	2	2	4	6	7	6	5	3	2	2	—	—	—
−53	3	2	2	4	6	7	6	5	3	2	2	—	—	—
−54	2	1	2	3	6	7	6	5	3	2	2	—	—	—
−55	2	—	2	3	5	6	5	4	3	2	2	—	—	—
−56	2	—	2	3	5	6	5	4	2	2	1	—	—	—
−57	2	—	2	3	5	6	5	4	2	2	—	—	—	—
−58	2	—	2	3	4	5	4	3	2	2	—	—	—	—
−59	1	—	2	2	4	5	4	3	2	2	—	—	—	—
−60	1	—	2	2	4	5	4	3	2	2	—	—	—	—

(MS) - (MS)$_{CA}$	Relative Mastery at CA	<6-4 to 6-4	6-5 to 6-6	6-7 to 7-2	7-3 to 7-9	7-10 to 8-4	8-5 to 8-10	8-11 to 9-6	9-7 to 10-5	10-6 to 11-11	12-0 to 13-0	13-1 to 15-3	15-4 to 16-4	16-5 to 18-4
−61	1	—	2	2	4	4	4	3	2	2	—	—	—	—
−62	1	—	2	2	4	4	3	3	2	2	—	—	—	—
−63	1	—	1	2	3	4	3	2	2	1	—	—	—	—
−64	1	—	—	2	3	4	3	2	2	—	—	—	—	—
−65	1	—	—	2	3	3	3	2	2	—	—	—	—	—
−66	1	—	—	2	3	3	3	2	2	—	—	—	—	—
−67	1	—	—	2	3	3	2	2	2	—	—	—	—	—
−68	1	—	—	2	2	3	2	2	2	—	—	—	—	—
−69	0[2]	—	—	2	2	3	2	2	2	—	—	—	—	—
−70	—	—	—	2	2	2	2	2	2	—	—	—	—	—
−71	—	—	—	1	2	2	2	2	2	—	—	—	—	—
−72	—	—	—	—	2	2	2	2	1	—	—	—	—	—
−73	—	—	—	—	2	2	2	2	—	—	—	—	—	—
−74	—	—	—	—	2	2	2	2	—	—	—	—	—	—
−75	—	—	—	—	2	2	2	2	—	—	—	—	—	—
−76	—	—	—	—	2	2	2	1	—	—	—	—	—	—
−77	—	—	—	—	2	2	2	—	—	—	—	—	—	—
−78	—	—	—	—	2	2	2	—	—	—	—	—	—	—
−79	—	—	—	—	1	2	1	—	—	—	—	—	—	—
−80	—	—	—	—	—	2	—	—	—	—	—	—	—	—
−81	—	—	—	—	—	2	—	—	—	—	—	—	—	—
−82	—	—	—	—	—	2	—	—	—	—	—	—	—	—
−83	—	—	—	—	—	1	—	—	—	—	—	—	—	—
−84	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−85	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[2]Approximate value (less than 0.5%)

Revised

Total Group

TABLE III – Word Attack

Relative Mastery and Percentile Rank for Chronological Age

(MS) – (MS$_{GA}$)	Relative Mastery at GA	Percentile Rank <6-5 to 6-5	6-6 to 8-3	8-4 to 11-4	11-5 to 13-10	13-11 to 15-1	15-2 to 16-10	16-11 to 18-4
45	—	—	—	—	—	—	—	—
44	—	—	—	99	99	—	—	—
43	—	—	—	98	98	—	—	—
42	—	99	99	98	98	99	99	99
41	—	98	98	98	98	98	98	98
40	—	98	98	98	98	98	98	98
39	—	98	98	98	98	98	98	98
38	—	98	97	98	98	98	98	98
37	—	98	97	97	97	98	98	98
36	—	98	97	97	97	98	98	98
35	—	97	96	97	97	97	97	97
34	—	96	96	96	96	97	97	97
33	—	96	95	96	96	97	97	97
32	—	95	95	96	95	96	96	96
31	—	94	94	95	95	96	96	96
30	—	94	94	94	94	95	95	95
29	100[1]	93	93	94	94	95	95	95
28	99	92	92	93	93	94	94	94
27	99	91	92	92	93	93	94	94
26	99	90	91	92	92	93	93	93
25	99	89	90	91	91	92	93	92
24	99	88	89	90	90	91	92	91
23	99	87	88	89	90	90	91	90
22	99	86	86	88	89	89	90	89
21	99	85	85	87	88	88	89	88
20	98	84	84	86	87	88	88	87
19	98	83	83	85	86	86	87	86
18	98	82	81	84	85	85	85	85
17	98	80	80	82	84	84	84	84
16	98	78	78	81	83	83	83	83
15	98	77	77	80	81	82	82	81
14	98	75	75	78	80	80	80	80
13	97	74	74	77	78	79	79	78
12	97	72	72	75	77	77	77	77
11	97	70	70	73	75	76	75	75
10	96	69	69	72	74	74	74	74
9	96	67	67	70	72	72	72	72
8	96	66	65	68	70	70	70	70
7	95	64	64	66	68	68	68	68
6	95	62	62	64	66	65	65	66
5	94	60	60	62	63	63	63	63
4	93	58	58	60	61	60	60	60
3	93	56	56	58	58	57	57	58
2	92	54	54	55	55	54	55	55
1	91	52	52	53	53	52	52	53
0	90	50	50	50	50	50	50	50
−1	89	48	48	48	48	47	47	47
−2	88	46	46	46	46	44	44	43
−3	87	44	44	44	44	42	42	40
−4	85	42	42	42	42	40	40	38
−5	84	40	40	40	40	38	37	36
−6	82	38	38	38	38	35	34	33
−7	81	36	36	36	36	33	32	31
−8	79	34	34	34	34	31	30	29
−9	77	32	32	32	32	29	28	27
−10	75	30	30	31	30	27	26	25
−11	73	28	28	29	28	25	24	24
−12	71	26	26	27	27	23	22	22
−13	68	25	24	26	25	22	20	20
−14	66	23	22	24	23	20	19	19
−15	63	22	21	23	22	19	17	17
−16	61	20	20	21	20	17	16	16
−17	58	19	19	20	19	16	15	15
−18	55	18	18	19	18	15	14	13
−19	53	17	16	17	16	14	13	12
−20	50	16	15	16	15	13	12	11
−21	47	15	14	15	14	12	11	10
−22	45	14	13	14	13	11	10	9
−23	42	13	12	13	12	10	9	8
−24	39	12	11	12	11	9	9	8
−25	37	11	10	11	10	8	8	7
−26	31	10	10	10	9	8	7	6
−27	32	9	9	9	8	8	7	6
−28	29	9	8	8	8	7	6	5
−29	27	8	7	8	7	6	6	5
−30	25	7	7	7	6	6	5	5
−31	23	6	6	6	6	6	5	4
−32	21	6	6	6	6	5	4	4
−33	19	5	5	5	5	5	4	4
−34	18	4	5	5	5	5	4	3
−35	16	4	4	5	4	4	4	3
−36	15	4	4	4	4	4	3	2
−37	13	3	4	4	4	4	3	2
−38	12	3	4	4	3	4	3	2
−39	11	2	3	3	3	3	2	2
−40	10	2	3	3	3	3	2	2
−41	9	2	3	3	3	3	2	2
−42	8	2	2	2	3	3	2	1
−43	7	2	2	2	2	2	2	—
−44	7	2	2	2	2	2	2	—
−45	6	1	2	2	2	2	1	—
−46	5	—	2	2	2	2	—	—
−47	5	—	1	2	2	2	—	—
−48	4	—	—	1	2	2	—	—
−49	4	—	—	—	2	1	—	—
−50	4	—	—	—	2	—	—	—
−51	3	—	—	—	1	—	—	—
−52	3	—	—	—	—	—	—	—
−53	3	—	—	—	—	—	—	—
−54	2	—	—	—	—	—	—	—
−55	2	—	—	—	—	—	—	—
−56	2	—	—	—	—	—	—	—
−57	2	—	—	—	—	—	—	—
−58	2	—	—	—	—	—	—	—
−59	1	—	—	—	—	—	—	—
−60	1	—	—	—	—	—	—	—
−61	1	—	—	—	—	—	—	—
−62	1	—	—	—	—	—	—	—
−63	1	—	—	—	—	—	—	—
−64	1	—	—	—	—	—	—	—
−65	1	—	—	—	—	—	—	—
−66	1	—	—	—	—	—	—	—
−67	1	—	—	—	—	—	—	—
−68	1	—	—	—	—	—	—	—
−69	0[2]	—	—	—	—	—	—	—

[1]Approximate value (more than 99.5%)
[2]Approximate value (less than 0.5%)

Revised

TABLE III – Word Comprehension

Relative Mastery and Percentile Rank for Chronological Age

Total Group

(MS) - (MS$_{GA}$)	Relative Mastery at GA	Percentile Rank <6-11 to 6-11	7-0 to 7-5	7-6 to 8-3	8-4 to 8-9	8-10 to 9-7	9-8 to 10-9	10-10 to 12-6	12-7 to 13-10	13-11 to 14-8	14-9 to 16-11	17-0 to 18-1
50	—	—	—	—	—	—	—	—	—	—	—	—
49	—	—	—	—	—	—	—	—	—	—	—	—
48	—	99	—	—	—	—	—	—	—	—	—	—
47	—	98	—	—	—	—	—	—	—	—	—	—
46	—	98	—	—	—	—	—	—	—	—	—	—
45	—	98	—	—	—	—	—	—	—	—	—	—
44	—	98	99	—	—	—	—	—	—	—	—	—
43	—	98	98	—	—	—	—	—	—	—	—	—
42	—	97	98	—	—	—	—	—	—	—	—	—
41	—	97	98	99	—	—	—	—	—	—	—	—
40	—	96	98	98	—	—	—	—	—	—	—	—
39	—	96	97	98	—	—	—	—	—	—	—	—
38	—	95	97	98	—	—	—	—	—	—	—	—
37	—	95	96	98	99	—	—	—	—	—	—	—
36	—	94	96	98	98	—	—	—	—	—	—	—
35	—	94	96	97	98	—	—	—	—	—	—	—
34	—	93	95	97	98	—	—	—	—	—	—	—
33	—	92	94	96	97	99	—	—	—	—	—	—
32	—	92	94	96	97	98	—	—	—	—	—	—
31	—	91	93	95	96	98	—	—	—	—	99	99
30	—	90	92	94	96	98	99	—	—	—	98	98
29	100[1]	90	92	94	95	97	98	—	—	—	98	98
28	99	89	91	93	94	96	98	99	—	—	98	98
27	99	88	90	92	93	96	98	98	99	99	98	98
26	99	88	89	92	92	95	97	98	98	98	98	97
25	99	87	88	91	91	94	96	97	98	98	97	97
24	99	86	87	90	90	93	95	97	97	98	96	96
23	99	85	86	88	89	92	94	96	97	97	96	96
22	99	84	85	86	88	90	92	95	96	96	95	95
21	99	83	84	85	87	89	91	93	95	95	94	94
20	99	82	83	84	85	88	90	92	94	94	93	93
19	99	81	81	83	84	86	88	90	93	92	92	92
18	98	80	80	81	83	85	87	88	91	91	90	90
17	98	78	79	80	82	83	85	86	89	89	89	89
16	98	77	77	78	80	82	84	85	87	87	87	87
15	98	76	76	77	78	80	82	83	85	85	85	85
14	98	74	75	75	77	78	80	81	84	83	84	84
13	97	73	73	74	75	76	78	79	82	81	82	82
12	97	71	72	72	74	74	76	77	80	79	80	80
11	97	70	70	70	72	72	74	75	77	77	78	77
10	96	68	68	68	70	70	72	73	75	75	75	75
9	96	67	67	67	68	68	70	71	72	72	73	72
8	96	65	65	65	66	66	67	69	70	70	70	70
7	95	63	63	63	64	64	65	66	68	68	68	68
6	95	62	62	61	62	62	63	64	65	65	66	65
5	94	60	60	60	60	60	60	62	63	63	63	62
4	93	58	58	58	58	58	58	60	60	60	60	60
3	93	56	56	56	56	56	56	57	58	58	58	57
2	92	54	54	54	54	54	54	55	55	56	56	55
1	91	52	52	52	52	52	52	52	52	53	53	52
0	90	50	50	50	50	50	50	50	50	50	50	50
−1	89	48	48	48	48	48	48	48	48	48	48	47
−2	88	46	46	45	45	45	45	45	46	46	45	45
−3	87	44	44	43	43	43	43	43	44	44	43	43
−4	85	42	42	40	40	40	40	40	42	42	40	41
−5	84	40	40	38	38	38	38	38	40	40	38	39
−6	82	38	38	36	36	36	36	36	38	38	36	37
−7	81	36	36	34	34	34	33	34	36	36	34	35
−8	79	34	34	32	32	32	31	32	34	34	32	33
−9	77	32	32	30	30	30	29	30	32	32	30	31
−10	75	30	30	28	28	28	27	28	30	31	28	29

[1]Approximate value (more than 99.5%)
[2]Approximate value (less than 0.5%)

(MS) - (MS$_{GA}$)	Relative Mastery at GA	Percentile Rank <6-11 to 6-11	7-0 to 7-5	7-6 to 8-3	8-4 to 8-9	8-10 to 9-7	9-8 to 10-9	10-10 to 12-6	12-7 to 13-10	13-11 to 14-8	14-9 to 16-11	17-0 to 18-1
−11	73	29	29	26	26	26	25	26	28	29	27	27
−12	71	27	27	25	25	25	23	25	26	27	25	26
−13	68	25	25	23	23	23	21	23	25	26	24	24
−14	66	24	24	22	22	21	20	21	23	21	22	23
−15	63	22	22	20	20	20	18	20	22	23	21	21
−16	61	21	21	19	18	18	16	18	20	21	19	20
−17	58	20	20	18	17	16	14	16	19	20	18	18
−18	55	19	19	16	16	15	13	15	17	19	17	17
−19	53	17	17	15	15	14	11	13	16	17	16	16
−20	50	16	16	14	13	12	10	12	15	16	15	15
−21	47	15	15	13	12	11	9	10	14	15	13	14
−22	45	14	14	12	11	10	8	9	12	14	12	13
−23	42	13	13	12	10	9	7	8	11	13	12	12
−24	39	12	12	11	9	8	6	7	10	12	11	11
−25	37	11	11	10	8	7	6	6	9	11	10	10
−26	34	10	10	9	8	7	5	6	8	10	9	10
−27	32	10	10	8	7	6	5	5	7	9	8	9
−28	29	9	9	8	6	5	4	5	6	8	8	8
−29	27	8	8	7	6	5	4	4	6	7	7	8
−30	25	7	8	6	5	4	3	4	5	6	7	7
−31	23	7	7	6	5	4	3	3	4	6	6	6
−32	21	6	6	5	5	4	3	3	4	5	6	6
−33	19	6	6	5	4	3	2	2	3	4	5	5
−34	18	5	5	4	4	3	2	2	3	4	5	5
−35	16	4	5	4	4	3	2	2	2	3	4	5
−36	15	4	4	4	3	2	2	1	2	3	4	4
−37	13	4	4	3	3	2	2	—	2	2	3	4
−38	12	4	4	3	3	2	2	—	2	2	3	4
−39	11	3	4	3	3	2	1	—	1	2	3	3
−40	10	3	3	3	2	2	—	—	—	2	2	3
−41	9	3	3	2	2	2	—	—	—	2	2	3
−42	8	2	3	2	2	2	—	—	—	1	2	2
−43	7	2	2	2	2	1	—	—	—	—	2	2
−44	7	2	2	2	2	—	—	—	—	—	1	2
−45	6	2	2	2	2	—	—	—	—	—	—	2
−46	5	2	2	2	1	—	—	—	—	—	—	2
−47	5	1	2	2	—	—	—	—	—	—	—	2
−48	4	—	2	1	—	—	—	—	—	—	—	1
−49	4	—	1	—	—	—	—	—	—	—	—	—
−50	4	—	—	—	—	—	—	—	—	—	—	—
−51	3	—	—	—	—	—	—	—	—	—	—	—
−52	3	—	—	—	—	—	—	—	—	—	—	—
−53	3	—	—	—	—	—	—	—	—	—	—	—
−54	2	—	—	—	—	—	—	—	—	—	—	—
−55	2	—	—	—	—	—	—	—	—	—	—	—
−56	2	—	—	—	—	—	—	—	—	—	—	—
−57	2	—	—	—	—	—	—	—	—	—	—	—
−58	2	—	—	—	—	—	—	—	—	—	—	—
−59	1	—	—	—	—	—	—	—	—	—	—	—
−60	1	—	—	—	—	—	—	—	—	—	—	—
−61	1	—	—	—	—	—	—	—	—	—	—	—
−62	1	—	—	—	—	—	—	—	—	—	—	—
−63	1	—	—	—	—	—	—	—	—	—	—	—
−64	1	—	—	—	—	—	—	—	—	—	—	—
−65	1	—	—	—	—	—	—	—	—	—	—	—
−66	1	—	—	—	—	—	—	—	—	—	—	—
−67	1	—	—	—	—	—	—	—	—	—	—	—
−68	1	—	—	—	—	—	—	—	—	—	—	—
−69	0[2]	—	—	—	—	—	—	—	—	—	—	—

Revised

Total Group

TABLE III – Passage Comprehension

Relative Mastery and Percentile Rank at Chronological Age

(MS) – (MS$_{GA}$)	Relative Mastery at GA	Percentile Rank: <7-0 to 7-0	7-1 to 7-9	7-10 to 8-9	8-10 to 10-3	10-4 to 11-9	11-10 to 13-3	13-4 to 14-7	14-8 to 16-5	16-6 to 18-0
50	—	—	—	—	—	—	—	—	—	—
49	—	99	—	—	—	—	—	—	—	—
48	—	98	—	—	—	—	—	—	—	—
47	—	98	—	—	—	—	—	—	—	—
46	—	98	—	—	—	—	—	—	—	—
45	—	98	99	—	—	—	—	—	—	—
44	—	98	98	—	—	—	—	—	—	—
43	—	97	98	—	—	—	—	—	—	—
42	—	97	98	—	—	—	—	—	—	—
41	—	96	97	99	—	—	—	—	—	—
40	—	96	97	98	—	—	—	—	—	99
39	—	95	97	98	—	—	—	—	—	98
38	—	95	96	98	—	—	—	—	—	98
37	—	94	96	98	99	—	—	—	99	98
36	—	94	95	97	98	—	—	—	98	98
35	—	93	95	97	98	99	99	—	98	98
34	—	93	94	97	98	98	98	99	98	98
33	—	92	94	96	97	98	98	98	98	97
32	—	92	93	96	97	98	98	98	98	97
31	—	91	92	95	96	98	98	98	98	97
30	—	90	92	95	95	98	98	98	97	96
29	100[1]	89	91	94	95	97	97	97	97	96
28	99	88	90	93	94	96	96	97	96	96
27	99	88	89	92	93	95	96	96	96	95
26	99	87	89	91	92	94	95	96	95	95
25	99	86	88	90	91	93	94	95	95	94
24	99	85	87	89	90	92	93	94	94	94
23	99	84	86	88	88	91	92	94	94	93
22	99	82	85	87	87	90	91	93	93	92
21	99	81	84	86	86	89	90	92	92	91
20	99	80	83	85	85	87	88	91	91	90
19	99	79	81	83	84	86	87	90	90	89
18	98	78	80	82	82	85	85	88	89	87
17	98	76	79	81	81	84	84	87	88	86
16	98	75	77	79	80	82	82	85	86	85
15	98	74	76	78	78	80	80	84	85	83
14	98	72	75	76	76	78	78	82	83	82
13	97	71	73	75	75	77	76	80	81	80
12	97	69	71	73	73	75	74	79	80	78
11	97	68	70	71	71	73	72	77	78	77
10	96	66	68	70	70	71	70	75	76	75
9	96	65	66	68	68	69	69	72	74	72
8	96	63	64	66	66	67	67	70	71	70
7	95	62	62	64	64	64	64	68	69	68
6	95	60	60	62	62	62	62	65	66	65
5	94	59	58	60	60	60	60	62	63	62
4	93	57	57	58	58	58	58	60	60	60
3	93	55	55	56	56	56	56	57	58	57
2	92	54	53	54	54	54	54	55	55	55
1	91	52	52	52	52	52	52	52	53	53
0	90	50	50	50	50	50	50	50	50	50
−1	89	48	48	49	48	48	48	48	48	47
−2	88	46	46	47	46	46	46	46	45	45
−3	87	44	44	45	44	44	44	44	43	43
−4	85	42	42	43	42	42	42	42	40	40
−5	84	40	40	42	40	40	40	40	38	38
−6	82	38	38	40	38	38	38	38	36	36
−7	81	36	37	38	36	36	36	36	34	34
−8	79	34	35	36	34	35	34	34	32	32
−9	77	32	33	34	32	33	32	32	30	30
−10	75	30	32	32	30	32	30	30	28	28

(MS) – (MS$_{GA}$)	Relative Mastery at GA	Percentile Rank: <7-0 to 7-0	7-1 to 7-9	7-10 to 8-9	8-10 to 10-3	10-4 to 11-9	11-10 to 13-3	13-4 to 14-7	14-8 to 16-5	16-6 to 18-0
−11	73	28	30	30	28	30	28	28	27	27
−12	71	27	28	28	26	28	26	26	25	
−13	68	25	26	27	25	27	25	24	23	23
−14	66	23	24	25	23	25	23	23	22	22
−15	63	22	23	23	22	23	22	21	20	20
−16	61	20	21	22	20	22	20	20	19	19
−17	58	19	19	20	19	20	19	18	17	18
−18	55	18	18	19	18	19	18	17	16	16
−19	53	16	16	18	17	18	16	16	15	15
−20	50	15	15	16	15	16	15	15	14	14
−21	47	14	14	15	14	15	14	13	13	13
−22	45	13	13	14	13	14	13	12	12	12
−23	42	12	12	13	12	13	12	11	11	11
−24	39	11	11	12	11	12	11	10	10	10
−25	37	10	11	11	10	11	10	9	9	9
−26	34	9	10	10	9	10	9	8	8	8
−27	32	9	9	9	8	9	8	7	7	8
−28	29	8	8	8	7	8	8	7	7	7
−29	27	7	8	7	6	7	7	6	6	7
−30	25	7	7	7	6	6	6	5	6	6
−31	23	6	7	6	5	6	5	5	5	6
−32	21	6	6	5	4	5	5	4	5	5
−33	19	5	6	5	4	4	4	4	4	5
−34	18	5	5	5	3	4	4	3	4	4
−35	16	5	5	4	3	4	3	3	4	4
−36	15	4	4	4	3	3	3	3	3	4
−37	13	4	4	3	2	3	2	2	3	3
−38	12	4	4	3	2	2	2	2	2	3
−39	11	3	3	3	2	2	2	2	2	3
−40	10	3	3	2	2	2	2	2	2	3
−41	9	3	3	2	2	2	2	2	2	2
−42	8	2	2	2	1	1	1	1	2	2
−43	7	2	2	2	—	—	—	—	2	2
−44	7	2	2	2	—	—	—	—	1	2
−45	6	2	2	1	—	—	—	—	—	2
−46	5	2	2	—	—	—	—	—	—	1
−47	5	1	1	—	—	—	—	—	—	—
−48	4	—	—	—	—	—	—	—	—	—
−49	4	—	—	—	—	—	—	—	—	—
−50	4	—	—	—	—	—	—	—	—	—
−51	3	—	—	—	—	—	—	—	—	—
−52	3	—	—	—	—	—	—	—	—	—
−53	3	—	—	—	—	—	—	—	—	—
−54	2	—	—	—	—	—	—	—	—	—
−55	2	—	—	—	—	—	—	—	—	—
−56	2	—	—	—	—	—	—	—	—	—
−57	2	—	—	—	—	—	—	—	—	—
−58	2	—	—	—	—	—	—	—	—	—
−59	1	—	—	—	—	—	—	—	—	—
−60	1	—	—	—	—	—	—	—	—	—
−61	1	—	—	—	—	—	—	—	—	—
−62	1	—	—	—	—	—	—	—	—	—
−63	1	—	—	—	—	—	—	—	—	—
−64	1	—	—	—	—	—	—	—	—	—
−65	1	—	—	—	—	—	—	—	—	—
−66	1	—	—	—	—	—	—	—	—	—
−67	1	—	—	—	—	—	—	—	—	—
−68	1	—	—	—	—	—	—	—	—	—
69	0[2]	—	—	—	—	—	—	—	—	—

[1]Approximate value (more than 99.5%)
[2]Approximate value (less than 0.5%)

Revised

TABLE III – Total Reading

Relative Mastery and Percentile Rank Chronological Age

(MS) – (MS)[24]	Relative Mastery at C4	Percentile Rank 4-9 to 4-7	4-9 to 5-9	5-0 to 6-9	6-0 to 7-1	7-2 to 7-9	8-0 to 8-5	8-6 to 9-0	9-1 to 9-5	9-6 to 10-0	10-1 to 10-8	10-9 to 11-1	11-2 to 14-1	14-2 to 15-8	15-9 to 17-8	17-9 to 18-0
35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31	—	—	—	99	—	—	—	—	—	—	—	—	—	—	—	—
30	—	—	99	98	99	99	—	—	—	—	—	—	—	—	—	—
29	100[1]	—	98	98	98	98	99	—	—	—	—	—	—	—	—	—
28	99	99	98	98	98	98	98	—	—	—	—	—	—	—	—	—
27	99	98	98	97	98	97	98	—	—	—	—	—	—	—	—	—
26	99	98	97	97	97	97	97	—	—	—	—	—	—	—	—	—
25	99	98	97	96	97	96	97	99	—	—	—	—	—	—	—	—
24	99	98	96	96	96	96	96	98	—	—	—	—	—	—	—	—
23	99	97	96	95	95	95	95	97	—	—	—	—	—	—	—	—
22	99	96	95	94	94	94	95	96	99	—	—	—	—	—	—	—
21	99	96	94	93	94	93	94	96	98	99	—	—	—	—	—	—
20	99	95	93	92	92	92	93	95	97	98	99	99	—	—	—	—
19	99	94	92	91	91	90	92	94	96	97	98	98	—	—	—	—
18	98	93	90	89	90	89	91	93	95	96	97	98	—	—	—	99
17	98	91	89	88	88	88	89	92	94	95	96	98	99	99	98	98
16	98	90	88	87	87	86	88	90	92	94	95	97	98	98	98	98
15	98	89	86	85	85	84	86	89	91	92	94	95	97	97	97	97
14	98	87	85	83	84	83	85	87	89	91	92	94	95	96	96	96
13	97	86	83	82	82	81	83	85	87	90	90	92	94	95	94	94
12	97	84	81	80	80	79	81	83	85	88	89	90	91	93	92	92
11	97	82	79	78	78	77	79	80	83	86	87	87	89	91	91	91
10	96	80	77	76	75	74	77	78	81	84	84	85	87	89	88	88
9	96	78	75	74	73	72	75	75	78	81	82	82	84	86	86	86
8	96	76	73	72	70	70	72	72	75	78	79	79	81	84	83	83
7	95	74	70	69	68	69	70	69	72	75	76	76	78	80	80	80
6	95	71	68	67	66	66	67	67	69	71	73	73	75	77	76	76
5	94	68	65	64	63	63	64	64	66	68	69	69	72	73	73	73
4	93	65	62	61	61	60	60	61	63	64	66	66	68	68	68	68
3	93	62	59	58	58	57	58	59	60	60	63	62	64	64	64	64
2	92	58	56	56	56	55	55	56	57	57	59	58	60	60	58	58
1	91	54	53	53	53	52	53	53	54	54	55	54	55	55	54	54
0	90	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
− 1	89	46	47	48	48	48	48	48	48	48	47	47	46	46	46	46
− 2	88	42	44	45	45	45	46	45	45	44	44	42	42	42	42	42
− 3	87	39	41	42	43	43	43	43	43	42	41	38	38	38	38	38
− 4	85	35	38	39	40	41	41	40	40	39	38	35	33	33	35	35
− 5	84	31	35	37	38	39	39	38	38	36	35	32	32	31	32	32
− 6	82	28	32	34	36	37	37	36	36	34	32	29	29	28	29	29
− 7	81	25	29	32	34	35	35	34	34	32	30	26	26	25	26	26
− 8	79	22	26	29	32	33	33	32	32	30	27	24	24	23	24	24
− 9	77	20	24	27	30	31	32	31	30	27	25	22	21	21	22	22
−10	75	17	22	25	27	29	30	29	28	25	23	20	19	19	20	20
−11	73	15	20	23	25	27	28	27	26	24	21	18	17	17	18	18
−12	71	13	18	21	23	26	26	25	24	22	19	16	15	15	16	16
−13	68	11	16	19	22	24	25	24	22	20	17	14	14	13	14	14
−14	66	10	14	18	20	23	23	22	21	18	15	13	12	12	13	13
−15	63	8	12	16	19	21	22	20	19	17	14	12	11	10	11	11

(MS) – (MS)[24]	Relative Mastery at C4	Percentile Rank 4-9 to 4-7	4-9 to 5-9	5-0 to 6-9	6-0 to 7-1	7-2 to 7-9	8-0 to 8-5	8-6 to 9-0	9-1 to 9-5	9-6 to 10-0	10-1 to 10-8	10-9 to 11-1	11-2 to 14-1	14-2 to 15-8	15-9 to 17-8	17-9 to 18-0
−16	61	7	11	14	17	20	20	19	18	16	13	10	10	9	10	10
−17	58	6	9	13	16	18	19	18	16	14	11	9	9	8	9	9
−18	55	4	8	12	14	17	17	16	15	13	10	8	8	7	8	8
−19	53	4	7	10	13	16	16	15	14	12	9	7	7	6	7	7
−20	50	3	6	9	12	14	15	14	12	11	8	7	6	5	6	6
−21	47	2	5	8	10	13	14	12	11	10	7	6	5	5	5	6
−22	45	1	4	7	9	12	12	11	10	9	7	5	5	4	5	5
−23	42	—	3	6	8	11	11	10	9	8	6	5	4	4	5	5
−24	39	—	3	5	7	10	10	9	8	7	6	4	4	4	4	4
−25	37	—	2	4	7	9	10	8	8	6	5	4	3	3	4	4
−26	34	—	2	4	6	8	9	8	7	6	5	4	3	3	3	3
−27	32	—	1	3	5	7	8	7	6	5	4	3	3	2	3	3
−28	29	—	—	3	5	6	7	6	6	5	4	3	2	2	2	2
−29	27	—	—	2	4	6	6	6	5	4	4	3	2	2	2	2
−30	25	—	—	2	4	5	6	5	5	4	3	2	2	2	2	2
−31	23	—	—	2	3	5	5	5	4	4	3	2	2	2	2	2
−32	21	—	—	1	3	4	5	4	4	3	2	2	2	2	2	1
−33	19	—	—	—	2	4	4	4	4	3	2	2	2	2	1	—
−34	18	—	—	—	2	3	4	4	3	3	2	2	2	1	—	—
−35	16	—	—	—	2	3	3	3	3	2	2	2	1	—	—	—
−36	15	—	—	—	2	3	3	3	3	2	2	1	—	—	—	—
−37	13	—	—	—	1	2	3	3	2	2	2	—	—	—	—	—
−38	12	—	—	—	—	2	2	2	2	2	2	—	—	—	—	—
−39	11	—	—	—	—	2	2	2	2	2	1	—	—	—	—	—
−40	10	—	—	—	—	2	2	2	2	2	—	—	—	—	—	—
−41	9	—	—	—	—	2	2	2	2	1	—	—	—	—	—	—
−42	8	—	—	—	—	1	2	2	2	—	—	—	—	—	—	—
−43	7	—	—	—	—	—	2	2	1	—	—	—	—	—	—	—
−44	7	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—
−45	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−46	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−47	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−48	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−49	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−50	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−51	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−52	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−53	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−54	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−55	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−56	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−57	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−58	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−59	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−60	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−61	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−62	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−63	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−64	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−65	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−66	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−67	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−68	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
−69	0[2]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[1]Approximate value (more than 99.5%)
[2]Approximate value (less than 0.5%)

Total Group

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TABLE VII

Mastery Scores at Age (CA or MA)

Total Group

Age in Months:	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Letter Identification	108	110	113	115	117	119	121	124	126	128	131	133	135	137	139	141	143	145	147	149
Word Identification	78	86	92	100	106	111	116	120	125	129	132	136	138	141	143	146	148	150	152	154
Word Attack	75	76	78	79	81	82	83	85	86	87	88	89	90	91	92	93	94	95	96	97
Word Comprehension	—	—	—	50	53	56	58	60	62	64	66	68	69	71	72	73	74	75	76	77
Passage Comprehension	—	—	—	54	58	61	64	67	69	71	73	75	76	78	79	81	82	83	85	86
TOTAL READING	63	67	72	76	80	84	86	89	92	95	97	100	102	104	106	108	110	112	113	115

Age in Months:	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
Letter Identification	151	152	154	156	157	159	161	162	164	165	167	168	169	170	171	172	173	173	174	175
Word Identification	156	158	160	162	164	166	168	169	170	172	174	175	176	178	179	180	181	182	183	184
Word Attack	98	98	99	100	100	101	102	102	103	104	104	105	105	106	106	107	107	108	108	109
Word Comprehension	78	79	80	80	81	82	82	83	84	84	85	85	86	86	87	88	88	89	89	90
Passage Comprehension	87	88	89	90	91	92	93	94	95	96	96	97	98	99	99	100	101	101	102	102
TOTAL READING	116	117	119	120	121	122	123	124	125	126	127	127	128	129	129	130	131	131	132	132

Age in Months:	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
Letter Identification	175	175	175	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Word Identification	185	186	187	188	188	189	190	191	192	192	193	194	194	195	195	196	196	196	197	198
Word Attack	109	109	110	110	111	111	111	112	112	112	113	113	113	114	114	114	114	115	115	115
Word Comprehension	90	91	91	92	92	92	93	93	94	94	94	95	95	96	96	96	96	97	97	98
Passage Comprehension	103	104	104	105	105	106	107	107	108	108	109	109	110	110	111	111	112	112	113	113
TOTAL READING	133	133	134	134	135	135	136	136	137	137	137	138	138	139	139	139	140	140	140	141

Age in Months:	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
Letter Identification	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Word Identification	198	198	199	200	200	200	201	202	202	202	203	203	204	204	204	204	205	205	206	206
Word Attack	116	116	116	116	117	117	117	117	118	118	118	118	118	119	119	120	120	120	120	120
Word Comprehension	98	98	98	99	99	99	100	100	100	101	101	101	102	102	102	102	103	103	103	104
Passage Comprehension	114	114	115	115	116	116	116	117	117	118	118	118	119	119	119	120	120	120	121	121
TOTAL READING	141	142	142	142	142	143	143	143	144	144	144	144	145	145	145	145	146	146	146	146

Age in Months:	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
Letter Identification	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Word Identification	206	206	207	208	208	208	208	209	209	210	210	210	211	211	212	212	212	212	212	213
Word Attack	120	120	120	120	121	121	121	121	121	122	122	122	122	122	122	122	122	122	123	123
Word Comprehension	104	104	104	105	105	105	106	106	106	106	107	107	107	107	108	108	108	108	108	109
Passage Comprehension	122	122	122	122	123	123	124	124	124	124	125	125	125	126	126	126	126	127	127	127
TOTAL READING	146	147	147	147	147	147	148	148	148	148	148	148	149	149	149	149	150	150	150	150

Age in Months:	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199
Letter Identification	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Word Identification	213	213	214	214	214	214	214	215	215	215	216	216	216	216	216	217	217	217	218	218
Word Attack	123	123	123	123	123	123	124	124	124	124	124	124	124	124	124	124	124	124	125	125
Word Comprehension	109	109	110	110	110	110	110	111	111	111	112	112	112	112	113	113	113	114	114	114
Passage Comprehension	128	128	128	128	128	129	129	129	129	130	130	130	130	130	131	131	131	131	131	131
TOTAL READING	150	151	151	151	151	152	152	152	152	153	153	153	153	153	154	154	154	154	154	154

Age in Months:	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
Letter Identification	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Word Identification	218	218	218	219	219	219	220	220	220	220	220	220	220	221	221	221	222	222	222	222
Word Attack	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	126	126	126	126	126
Word Comprehension	114	115	115	115	115	116	116	116	116	117	117	117	117	117	118	118	118	118	118	118
Passage Comprehension	132	132	132	132	132	132	132	132	132	132	133	133	133	133	133	133	133	133	133	133
TOTAL READING	154	155	155	155	155	155	155	155	155	155	155	156	156	156	156	156	156	156	156	156

TABLE B-III

KEYMATH DIAGNOSTIC ARITHMETIC TEST - PERCENTILE RANKS, CORRESPONDING TO TOTAL TEST RAW SCORES FOR GRADE AVERAGES (2-6)

Percentile Rank	7y3m	8y3m	9y3m	10y3m	11y3m	Percentile Rank
99	107-209	135-209	164-209	181-209	194-209	99
98	104-106	132-134	162-163	179-180	193	98
97	102-103	130-131	161	177-178	-	97
96	100-101	127-129	160	174-176	192	96
95	99	126	158-159	173	191	95
94	97-98	125	156-157	172	-	94
93	96	123-124	154-155	171	190	93
92	95	122	153	170	188-189	92
91	94	-	152	169	187	91
90	93	121	151	168	183-186	90
89	-	120	150	167	180-182	89
88	92	-	149	166	179	88
87	91	119	148	-	178	87
86	90	118	146-147	165	177	86
85	89	-	145	164	-	85
84	87-88	117	144	163	176	84
83	-	116	143	-	-	83
82	86	113-115	141-142	162	175	82
81	-	112	-	-	-	81
80	85	-	140	161	174	80
79	-	111	139	160	-	79
78	-	110	-	-	173	78
77	84	-	138	159	-	77
76	-	109	137	158	172	76
75	83	-	-	-	-	75
74	-	108	136	157	171	74
73	-	107	135	156	-	73
72	82	-	134	-	170	72
71	-	106	-	155	-	71
70	81	105	133	154	169	70
69	-	-	-	-	-	69
68	80	104	132	153	168	68
67	-	-	-	-	-	67
66	79	103	131	152	167	66
65	-	-	-	-	166	65
64	78	102	130	151	-	64
63	-	-	-	-	165	63
62	77	101	129	-	-	62
61	-	-	-	150	164	61
60	76	100	128	-	163	60
59	-	-	127	149	-	59
58	75	99	-	148	162	58
57	-	-	126	147	-	57
56	-	98	125	-	161	56
55	74	-	-	146	-	55
54	-	97	124	145	-	54
53	-	96	-	144	160	53
52	-	-	123	-	-	52
51	73	95	122	143	-	51

Percentile Rank	7y9m	8y3m	9y3m	10y3m	11y3m	Percentile Rank
50	-	-	-	-	159	50
49	-	94	-	-	-	49
48	72	-	121	142	-	48
47	-	93	-	-	158	47
46	-	-	120	141	-	46
45	71	92	-	140	-	45
44	-	-	119	-	-	44
43	-	91	-	139	157	43
42	70	-	118	-	-	42
41	-	90	-	138	-	41
40	-	89	117	137	156	40
39	69	-	-	-	-	39
38	-	88	116	136	155	38
37	-	-	-	-	-	37
36	68	87	115	135	154	36
35	-	86	-	-	-	35
34	67	-	114	134	153	34
33	-	85	-	-	152	33
32	-	-	113	133	-	32
31	66	84	112	132	151	31
30	-	-	111	131	150	30
29	-	83	110	130	-	29
28	65	-	109	129	149	28
27	-	-	108	128	-	27
26	64	82	107	127	148	26
25	-	-	106	126	147	25
24	63	-	105	-	146	24
23	-	81	-	125	-	23
22	-	-	104	124	145	22
21	62	80	103	123	144	21
20	-	-	102	122	143	20
19	61	79	-	-	142	19
18	-	-	101	121	140-141	18
17	60	78	-	120	-	17
16	59	-	100	119	138-139	16
15	-	77	-	117-118	137	15
14	58	76	99	116	135-136	14
13	-	-	98	-	134	13
12	57	75	97	115	133	12
11	56	-	96	114	132	11
10	55	74	88-95	113	131	10
9	54	73	87	112	130	9
8	-	72	86	111	126-129	8
7	53	71	85	109-110	124-125	7
6	52	70	83-84	107-108	123	6
5	50-51	69	81-82	105-106	121-122	5
4	46-49	61-68	80	104	115-120	4
3	45	59-60	75-79	99-103	113-114	3
2	43-44	57-58	74	97-98	109-112	2
1	0-42	0-56	0-73	0-96	0-108	1

TABLE

KEYMATH DIAGNOSTIC ARITHMETIC TEST - PERCENTILE RANKS
CORRESPONDING TO TOTAL TEST RAW SCORES FOR GRADE AGE AVERAGES (1-6)

Percentile Rank	7y 11m	8y 10m	9y 10m	10y 9m	11y 11m	Percentile Rank
99	126-209	157-209	169-209	189-209	202-209	99
98	124-125	153-156	167-168	186-188	200-201	98
97	121-123	151-152	166	185	198-199	97
96	119-120	148-150	165	184	197	96
95	118	147	-	183	196	95
94	117	145-146	164	182	195	94
93	116	144	163	181	-	93
92	115	143	162	179-180	193-194	92
91	-	142	-	-	192	91
90	114	141	161	177-178	191	90
89	112-113	140	-	176	190	89
88	111	139	160	-	189	88
87	-	138	159	175	-	87
86	110	137	-	-	188	86
85	109	-	158	174	187	85
84	-	136	-	-	-	84
83	108	-	157	173	186	83
82	-	135	156	172	-	82
81	107	134	-	171	185	81
80	106	-	155	170	-	80
79	-	133	-	-	184	79
78	105	132	154	169	183	78
77	-	131	-	168	-	77
76	104	130	153	-	182	76
75	103	-	-	167	-	75
74	-	129	152	-	181	74
73	102	-	-	166	180	73
72	-	128	151	-	-	72
71	101	127	-	-	179	71
70	-	-	150	165	-	70
69	100	126	-	-	178	69
68	-	-	149	164	-	68
67	99	125	-	-	177	67
66	-	-	148	163	-	66
65	98	124	147	-	176	65
64	-	-	-	-	175	64
63	-	123	146	162	-	63
62	97	-	-	-	174	62
61	-	-	145	-	-	61
60	-	122	-	161	173	60
59	96	-	144	-	-	59
58	-	121	143	-	172	58
57	95	-	-	160	171	57
56	-	-	142	-	-	56
55	94	120	-	159	170	55
54	93	118-119	141	-	169	54
53	92	117	-	158	-	53
52	91	-	-	-	168	52
51	-	116	140	157	-	51

Percentile Rank	7y 11m	8y 10m	9y 10m	10y 9m	11y 11m	Percentile Rank
50	90	-	-	156	167	50
49	-	115	139	-	-	49
48	89	-	-	155	166	48
47	-	-	138	-	-	47
46	88	114	137	154	165	46
45	87	-	-	-	-	45
44	-	-	136	153	164	44
43	86	113	-	152	-	43
42	-	-	135	-	163	42
41	85	112	-	151	-	41
40	-	-	134	-	-	40
39	84	111	-	150	162	39
38	-	-	133	-	-	38
37	-	-	-	149	161	37
36	83	110	132	-	-	36
35	-	-	131	148	160	35
34	82	109	130	147	159	34
33	81	108	-	-	-	33
32	-	107	129	146	158	32
31	80	-	128	-	157	31
30	-	106	127	145	155-156	30
29	79	105	-	-	154	29
28	-	-	126	144	153	28
27	78	104	-	-	152	27
26	-	-	125	143	-	26
25	-	103	124	142	151	25
24	77	-	-	141	150	24
23	-	102	123	140	-	23
22	76	101	-	138-139	149	22
21	-	100	122	-	148	21
20	75	-	121	137	147	20
19	-	99	120	136	-	19
18	74	98	119	135	145-146	18
17	73	97	118	134	144	17
16	-	95-96	117	132-133	143	16
15	72	92-94	-	131	142	15
14	-	91	116	129-130	141	14
13	71	90	115	128	140	13
12	70	89	109-113	127	139	12
11	69	87-88	107-108	125-126	138	11
10	-	86	106	124	134-137	10
9	68	85	-	-	131-133	9
8	67	84	105	123	130	8
7	66	-	104	-	-	7
6	64-65	82-83	103	122	129	6
5	62-63	81	-	121	128	5
4	60-61	78-80	102	120	122-127	4
3	59	74-77	101	119	120-121	3
2	57-58	69-73	94-100	117-118	114-119	2
1	0-56	0-68	0-93	0-116	0-113	1

TABLE X – STANDARD SCORES, STANINES, AND NORMAL CURVE EQUIVALENTS (NCEs)

PERCENTILE RANK	STANDARD SCORE MEAN=50 SD=10	STANDARD SCORE MEAN=100 SD=15	STANINE	NORMAL CURVE EQUIVALENTS (NCE's)
99	73	135	9	99
98	71	131	9	93
97	69	128	9	90
96	68	126	8	87
95	66	125	8	85
94	66	123	8	83
93	65	122	8	81
92	64	121	8	80
91	63	120	8	78
90	63	119	8	77
89	62	118	7	76
88	62	118	7	75
87	61	117	7	74
86	61	116	7	73
85	60	116	7	72
84	60	115	7	71
83	60	114	7	70
82	59	114	7	69
81	59	113	7	68
80	58	113	7	68
79	58	112	7	67
78	58	112	7	66
77	57	111	6	66
76	57	111	6	65
75	57	110	6	64
74	56	110	6	64
73	56	109	6	63
72	56	109	6	62
71	56	108	6	62
70	55	108	6	61
69	55	108	6	60
68	55	107	6	60
67	54	107	6	59
66	54	106	6	59
65	54	106	6	58
64	54	105	6	58
63	53	105	6	57
62	53	105	6	56
61	53	104	6	56
60	53	104	5	55
59	52	103	5	55
58	52	103	5	54
57	52	103	5	54
56	52	102	5	53
55	51	102	5	53
54	51	102	5	52
53	51	101	5	52
52	51	101	5	51
51	50	100	5	50
50	50	100	5	50
49	50	100	5	50
48	49	99	5	49
47	49	99	5	48
46	49	98	5	48
45	49	98	5	47
44	48	98	5	47
43	48	97	5	46
42	48	97	5	46
41	48	97	5	45
40	47	96	4	45
39	47	96	4	44
38	47	95	4	44
37	47	95	4	43
36	46	95	4	42
35	46	94	4	42
34	46	94	4	41
33	46	93	4	41
32	45	93	4	40
31	45	92	4	40
30	45	92	4	39
29	44	92	4	38
28	44	91	4	38
27	44	91	4	37
26	44	90	4	36
25	43	90	4	36
24	43	89	4	35
23	43	89	3	34
22	42	88	3	34
21	42	88	3	33
20	42	87	3	32
19	41	87	3	32
18	41	86	3	31
17	40	86	3	30
16	40	85	3	29
15	40	84	3	28
14	39	84	3	27
13	39	83	3	26
12	38	82	3	25
11	38	82	2	24
10	37	81	2	23
9	37	80	2	22
8	36	79	2	20
7	35	78	2	19
6	34	77	2	17
5	34	75	2	15
4	32	74	1	13
3	31	72	1	10
2	29	69	1	7
1	27	65	1	1

Appendix E

SAMPLES OF EDUCATION ASSESSMENT REPORT FORMATS

SAMPLE 1

EDUCATIONAL ASSESSMENT

Student: _____ Date of Assessment: _____

Grade: _____ Birthdate _____

School _____ Chronological Age _____

Behavior During Testing:

Test Results:

Results and Interpretation:

(Include skills mastered, skill deficits, and learning strengths and weaknesses)

Reading:

Basic Reading:

Reading Comprehension:

Mathematics:

Calculation

Reasoning

Written Language:

Listening Comprehension:

Oral Expression:

Summary and Conclusion:

Recommendations for Instruction:

Assessor(s) _____ _____

Name & Position Signature

_____ _____

_____ _____

SAMPLE 2

EDUCATIONAL ASSESSMENT

Student: _____

Date of Birth: _____ Age: _____

School: _____ Grade: _____

Reason for Referral:

Assessment Techniques or instruments used:

Assessment Tool & Results	Evaluator	Date

Observation during testing:

Results of assessment:

Description of Present Level Functioning

Oral Language

Listening Comprehension

Reading

Basic Reading

Reading Comprehension

Written Language

Mathematics

Calculation

Reasoning

Data Interpretation:

Student's Strengths

and needs

Signed _____

Date _____

SAMPLE 3

EDUCATIONAL ASSESSMENT

Pupil's Name _____

Last First MI

Date of Birth _____ School _____ Grade _____

BACKGROUND INFORMATION AND REASON FOR ASSESSMENT:

ASSESSMENT PROCEDURES AND OBSERVATIONS (list test results):

CURRENT LEVELS OF ACADEMIC ACHIEVEMENT AND PATTERNS OF DEVELOPMENT, LEARNING, AND BEHAVIOR:

DESCRIPTION OF BEHAVIORS SUGGESTING THE EXISTENCE OF A HANDICAPPING CONDITION:

Pupil's Name _____

Last First MI

DESCRIPTION OF SPECIAL EDUCATION OR RELATED SERVICES NEEDED, BASED ON THE CHILD'S PERFORMANCE AS IT DEVIATES FROM DEVELOPMENT AND/OR GENERAL EDUCATION OBJECTIVES:

CRITERIA USED IN ESTABLISHING THE ABOVE DEVIATIONS WHICH DETERMINE ELIGIBILITY FOR SPECIAL EDUCATION SERVICES:

_____	_____	_____
Signature	Position	Date Tested
_____	_____	_____
Signature	Position	Date Tested

(Developed by Worcester County Office of Special Education)